

LEHIGH ALUMNI BULLETIN



OUR COACHING STAFF

LAMBERTON

GLICK

PAZETTI

MURPHY

VOLUME 9

NOVEMBER, 1921

NUMBER 2

Published Monthly from October to June, inclusive, by the Alumni
Association of Lehigh University, Inc.

FORT PITT BRIDGE WORKS

OF PITTSBURG, PA.

**BRIDGES, BUILDINGS
STRUCTURAL STEEL**

**General Office,
20th Floor, Oliver Building, Pittsburgh
New York Office, 29 Broadway
Chicago Office, Ashland Block
Cleveland Office, Marshall Building
Purchasing Dept. and Works, Canonsburg**

**THEO. A. STRAUB, '90,
H. R. BLICKLE, '93,
P. B. STRAUB, '97,
SCHUYLER B. KNOX, '93,
E. H. BEAZELL, '90,**

**President
Vice-President and Consulting Engineer
Secretary and Treasurer
Contracting Engineer
Works Manager**



*Chalmette Works of the
American Sugar Refining Company*

Meeting the Needs of Industry

We Design,
Manufacture and Erect
Structural Steel
for
Bridges and Viaducts
Train Sheds and Warehouses
Mill and Factory Buildings
Office and Store Buildings
Power Houses
Machine Shops and Foundries
Over Bridges and Bins
Steel Structures for
Every Purpose
McClintic-Marshall
Annual Capacity, 600,000 Tons

SPECIFIC industries have come to learn that this organization can coordinate its knowledge and ability to fit the exact requirements of the particular industry. Sugar producers, automotive plants, iron and steel manufacturers, railroads, Governments, etc., have had demonstrated to their satisfaction the character and scope of our facilities in constructing steel structures for specific industries.

Seven of the largest fabricating shops in the world, a closely knit, systematized organization, plus the ability to perform rather than to promise—these are at your command to assist you on your requirements for steel structures.

The handy descriptive Booklet 204C can be secured on request.

McClintic-Marshall Company

General Offices: 1201 Oliver Building, PITTSBURGH, PA.

C. D. MARSHALL, '83, Pres.

H. H. MCCLINTIC, '88, Vice Pres. & Gen. Mgr.

R. W. KNIGHT, '94
G. R. ENSCOR, '96
C. M. DENISE, '98
T. L. CANNON, '03
R. MCINN, '07

T. A. KENNEDY, '07
E. F. GOHL, '07
L. A. WALKER, '08
G. A. CAFFALL, '10

McClintic-Marshall

Steel Industrial Buildings

American Abrasive Metals Co.

50 CHURCH ST.



NEW YORK CITY



[A patented combination of iron and abrasive grit]

To Prevent Slipping Accidents

Floor Plates
Stair Treads and Landings
Running Boards and Steps
Door Saddles

Car Steps and Platforms
Coal Hole Covers
Drainage Gratings
Cover Plates

For General Industrial Uses

Truing Up Brake Shoes
Pug Mill Paddles
Rabble Blades

Ash and Coal Conveying
Pipe, Chutes,
Liner Plates, etc.

R. S. EDMONDSON, '06, President
G. P. BARTHOLOMEW, '96, Vice-Pres.
WM. H. SAYRE, 21

GEORGE C. HUTCHINSON, '94
District Representative
Farmers Bank Bldg., Pittsburgh, Pa.

B. P. LAMBERTON, '05
District Representative
Washington, D. C.

THE DRAVO CONTRACTING COMPANY

PITTSBURGH

DIFFICULT FOUNDATIONS, RIVER and HARBOR IMPROVEMENT
BRIDGE PIERS and DAMS, MINING PLANT CONSTRUCTION
SHAFTS, SLOPES and TUNNELS

ASSOCIATED WITH THE COMPANY

F. R. DRAVO, '87
R. M. DRAVO, '89
J. J. NOLAN, '01

J. D. BERG, '03
E. T. GOTT, '09
L. C. ZOLLINGER, '09

V. B. EDWARDS, '11
W. J. JUDSON, '21
L. BEVAN, '21

DRAVO - DOYLE COMPANY

PITTSBURGH

CLEVELAND

INDIANAPOLIS

PHILADELPHIA

STEAM and HYDRAULIC EQUIPMENT, COMPLETE POWER
PLANT, WATER WORKS INSTALLATIONS

ASSOCIATED WITH THE COMPANY

F. R. DRAVO, '87

R. M. DRAVO, '89

S. P. FELIX, '08

J. O. BERG, '08

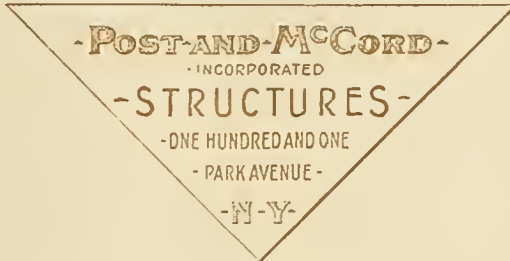
E. W. ESTES, '20

E. H. JENNESS, '21

VICTOR
BITUMINOUS COAL
ANTHRACITE COAL
AND COKE

GRAND CENTRAL TERMINAL
NEW YORK CITY
NORTH AMERICAN BUILDING
PHILADELPHIA

REMBRANDT PEALE, '83



SPECIALISTS
IN
DESIGN AND CONSTRUCTION

AUBREY WEYMOUTH, '94
CHIEF ENGINEER

Empire Coal Mining Company

Miners and Shippers

EMPIRE
Bituminous Coal

Stephen Girard Building

PHILADELPHIA

WM. ALDER WEBB, '91, President

OFFICIAL DIRECTORY ALUMNI ASSOCIATION LEHIGH UNIVERSITY, Inc.

President: Aubrey Weymouth, 101 Park Avenue, New York City.
Vice-President: Charles J. O'Neill, McGill Bldg., Washington, D. C.
Vice-President: Bernard T. Converse, Rosemont, Pa.
Treasurer: A. C. Dodson, care of Weston Dodson Co., Inc., Bethlehem, Pa.
Secretary: Walter R. Okeson, Drown Memorial Hall, Bethlehem, Pa.
Archivist: Preston A. Lambert, 215 South Centre Street, Bethlehem, Pa.

Honorary Alumni Trustees

Henry H. Scovil, 23 W. 51st Street, New York, N. Y.
Homer D. Williams, Carnegie Bldg., Pittsburgh, Pa.
William C. Dickerman, 165 Broadway, New York, N. Y.
Charles D. Marshall, Oliver Bldg., Pittsburgh, Pa.

Alumni Members Athletic Committee

Eugene G. Grace, '99
T. Burns, '01.
George C. Beck, '03.
Walter R. Okeson, '96, Treasurer.

Alumni Educational Committee

C. D. Marshall, '88, Chairman.
Franklin Baker, Jr., '95, Vice-Chairman.
H. G. Reist, '86, Elec. Dept.
M. A. DeWolfe Howe, '86, Arts.
H. H. McClintic, '88, Civ. Dept.
R. S. Perry, '88, Chem.
S. D. Warriner, '90, Mining.
H. T. Morris, '91, Mech.
W. S. Landis, '02, Met. and Chem.
George F. Murnane, '10, Bus. Adm.
W. R. Okeson, '96, Sec'y.

Alumni Conference Committee

C. D. Marshall
Harlan S. Miner.
W. C. Dickerman.
Walter R. Okeson.

Bulletin Publication Committee

T. M. Eynon, Chairman.
S. B. Knox, Vice-Chairman.
M. A. DeWolfe Howe.
Paul M. Paine.
George F. Murnane.
Raymond Walters.
Walter R. Okeson, Editor.

Alumni Memorial Committee

Charles L. Taylor, Chairman.
Franklin Baker, Jr., Vice-Chairman.
Frank R. Dravo, Chm. Building Comm.
H. H. McClintic, Building Committee.
W. C. Dickersman, Building Committee.
E. G. Grace, Building Committee.
H. R. Price.
H. S. Drinker.
Wm. Jennings.
F. A. Daboll.
W. P. Starkey.
W. R. Okeson, Secretary both Committees.

Secretaries Local Alumni Clubs

Chicago Lehigh Club, H. W. Kern, '92,
Secretary, 179 West Washington St.,
Chicago, Ill.
Detroit Lehigh Club, R. M. Neff, Secre-
tary, care Detroit Steel Products Co.,
Detroit, Mich.
Intermountain Lehigh Club, H. L. Bald-
win, '07, Secretary, Box 115, University
of Utah, Salt Lake City, Utah.

Lehigh Club of Central Pennsylvania, L.
G. Krause, '01, Secretary, 1912 Market
Street, Harrisburg, Pa.

Lehigh Club of China, Yen Te Ching, '01,
President, Wuchang, China.

Lehigh Club of Cuba, E. Beato, '08, Sec-
retary, 76 Paseo de Marti, Havanna,
Cuba.

Lehigh Club of New England, D. K. Dean,
'06, Secretary, Allberger Pump and
Condenser Co., 88 Broad St., Boston,
Mass.

Lehigh Club of Northern New York, C. L.
Moffatt, '04, Secretary, 218 Glenwood
Boulevard, Schenectady, N. Y.

Lehigh Club of Northern Ohio, Edmund
Quincy, '13, Secretary, 1856 Cadwell
Street, Cleveland, Ohio.

Lehigh Club of Southern New England,
J. W. Thurston, '96, Secretary, 260
Sisson Avenue, Hartford, Conn.

Lehigh Club of Western New York, Rich-
ard Stockton, '10, Secretary, 47 Nor-
wood Avenue, Buffalo, N. Y.

Lehigh Home Club, Robert W. Wolcott,
'18, Secretary, care of Bethlehem Fab-
ricators, Bethlehem, Pa.

Maryland Lehigh Club, W. F. Perkins,
'13, Secretary, 1025 N. Fulton Avenue,
Baltimore, Md.

New York Lehigh Club, Morton Sultzter, '12,
Secretary, Amer. T. & T. Co., 195 Broad-
way, New York City.

Northeast Pennsylvania Lehigh Club, A.
J. Wiegand, '15, Secretary, 817 Monroe
Avenue, Scranton, Pa.

Philadelphia Lehigh Club, Moriz Bern-
stein, '96, Secretary, 2130 EStaugh St.,
Philadelphia, Pa.

Pittsburgh Lehigh Club, George M. Baker,
'07, Secretary, General Electric Co.,
Oliver Bldg., Pittsburgh, Pa.

Southern Anthracite Lehigh Club, C. B.
Lawson, '10, Secretary, 220 Chestnut
Street, Pottsville, Pa.

Washington Lehigh Club, H. J. Jackson,
'08, Secretary, 514 Union Trust Bldg.,
Washington, D. C.

Southwestern Lehigh Club, F. P. Law-
rence, '10, Secretary, care of South-
western Telephone and Telegraph Co.,
St. Louis, Mo.

ALUMNI BULLETIN

OF

LEHIGH UNIVERSITY

PUBLISHED MONTHLY FROM OCTOBER TO JUNE, INCLUSIVE, BY THE ALUMNI ASSOCIATION, DROWN HALL, BETHLEHEM, PA.

SUBSCRIPTION PRICE, \$2.00 A YEAR

Entered as second class matter at Bethlehem, Pa., Post-office.

VOLUME 9

NOVEMBER, 1921

NUMBER 2

NEWS AND COMMENT

Students' Self-Aid Bureau In the October issue there was an insert giving a preliminary account of the "Students' Self-Aid Bureau," a new departure in undergraduate life. Probably many who read this notice wondered what it was all about. Now that our plan has actually taken form and substance it will be well to explain it in greater detail.

We have two ends in view. First to do away with the temptation to offer aspiring Prep. school and high school athletes inducements to go to college. We want to eliminate the stock excuse for this practice, namely, that it is only done in order that poor but ambitious boys can get an education. Secondly, we want to make it possible for any boy of the right calibre to get a Lehigh education, even though his finances would seem to forbid it. We want to help boys who are sincerely anxious to be Lehigh men, to come to Lehigh and to stand on their own feet while they are there. By doing this we can secure our fair share of the school-boy athletes who go to college each year, and will be free from grafters and tramp athletes who are looking for money and not for work.

We have organized a bureau of employment called the "Students' Self-Aid Bureau" and through the cooperation of the undergraduates are able to assign various agencies for shoes, clothes, pressing and cleaning, laundry, etc., to the men who most need help. We are organizing stores in the various fraternity houses. We have taken control of the sale of football programs, the Lehigh Calendar, "Beat Lafayette" buttons and ribbons, parking of automobiles at games, sale of "eats" at the games and many other similar activities. We have procured positions as waiters for a number of men and are planning many other activities. We are financing these activities, keeping an account of the returns and disbursing the profits among the men who do the work. The committees which we have organized or are organizing are as follows:

Subscription Committee—Membership: All Alumni. Object: To raise an operating fund.

Concession Committee—Membership: Alumni and Undergraduates. Object: To work out, organize, and supervise methods for students to earn their way through college.

Students' Advisory Committee—Membership: Faculty, Alumni and Undergraduates. Object: To help keep the men up in their college work.

New Material Committee—Membership: Alumni and Undergraduates. Object: To get a line on new material as far in advance as possible. To tabulate their qualifications as to athletics, scholarship and character. To interest the best of these men in Lehigh.

Steering Committee—D. M. Petty, '09, Chairman; W. R. Okeson, '96; C. I. Latig, '03; H. R. Walters, '03; V. J. Pazetti, '15; E. W. Burgess, '21.

Our plan is based on the idea that the money spent by 1000 Lehigh students during the college year will go much farther if they cooperate by doing part of their own work and especially if their various supplies are bought from or through other students. By having the alumni furnish capital or credit and mature business management it is possible for a great number of boys to finance their college education by work in their spare time, a thing which is practically impossible if each one works alone and without alumni and student cooperation.

I want to make clear to you in case you are interested in Lehigh Athletics and are thinking of helping this newly organized "Students' Self-Aid Bureau," that we have as our primary object the creation and maintenance of clean athletic teams at Lehigh. We want them to win a fair share of games not only because that is a natural feeling but because unless we do our proposed system will fail and be succeeded by something which would spoil the savor of victory due to the taint of professionalism that would attach to our teams.

We face today, in this Country, a serious condition in college athletics. Steadily amateur sport is being killed by the encroachment of the professional spirit. There is scarcely a college free from some share of it and some have been so carried away by the desire for victory that they have thrown their amateur ideals to the winds and stop at nothing as long as lying and hypocrisy will cover it up. Personally I don't believe in standing to one side and criticizing. The only thing to do is to jump in and take a step in the right direction. I want to prove that hard work and careful planning will make good teams as certainly as will the lavish expenditure of money. Therefore I am advocating and backing with all my might this effort on the part of Lehigh men to secure material only by legitimate, honest methods and make every boy who comes to us stand on his own feet.

No one knows more surely than I do the difficulties in the way. On one side are the men who, knowing nothing of the existing conditions, will say "Why do anything at all to encourage boys to come to Lehigh?" They fail to understand that with the methods in vogue no Prep. School or High School athlete is ever allowed to make his choice of a college without strong efforts being made to influence his choice. Unless we try to show the advantages of Lehigh he will go elsewhere. Also they do not realize that many of these boys cannot finance their way through college without either help or hard work. Third, that unaided effort on the part of these boys will not earn anything like the amount necessary for bare necessities. Unless we take an interest we won't get even the material which would naturally gravitate to us if no influence was being exerted by other colleges. Without material we will be constantly and decisively beaten by colleges of our own class. Human nature being as it is, neither alumni nor undergraduates will remain quiescent under defeat and methods which are widely used and known will be adopted by individuals or groups to secure victory at any cost.

On the other hand there are men who will oppose our proposed and present methods because they believe they are too ethical. They want success and they see it attained by other methods. They say "Why try to be better than the other fellow? Go to it and beat him at his own game." Every college has such men and if the fellows who believe in clean athletics won't fight for their belief and more than that won't work for the success of a decent system, free from lying and hypocrisy, they can't complain of the

results bound to come. Human nature is the same at Lehigh as elsewhere.

Personally my hope is for a system of employment which will eventually aid any poor boy who wants a Lehigh education and is not afraid to work to get it. What a wonderful thing it would be if we alumni, through our efforts, made this possible.

At present we have about 200 men in Lehigh who are working to secure at least part of their financial needs. About 20% of these men are athletes. Under our plan we are already helping many of the non-athletes and intend to extend it to more as rapidly as possible.

At first we will keep absolute control so that we may know the exact return from each branch of work and so that we may also prevent any one from profiting unduly if the work assigned to him proves especially remunerative. Without our management it is doubtful if any man could earn more than the cost of his board and room, and therefore we are endeavoring to have all the earnings go into a common fund out of which the bursar of the college will be paid the expenses of room and board for any boy who is faithfully doing the work assigned to him. This plan has objectionable features but at the start it seems impossible to do otherwise.

We will keep a strict account of all the money received and will render an account to all who subscribe to the operating fund so that they may feel sure that their money is used for no improper purpose.

The whole value of the plan is in pitiless publicity. The moment it is operated under cover it will drift rapidly into something as bad as any of the practices now common in college athletics. We propose to keep it clean, honest and wholesome, free from taint and hypocrisy. If that is too much of a strain on human nature then I personally favor dropping the whole plan and if needful discontinuing intercollegiate athletics. If we can't have decent, honest college teams the game ceases to be worth the candle and God help the American colleges if they must admit that clean intercollegiate sport is impossible.

* * *

We Apologize For any failure to print news sent in or delay in answering letters. Your Editor and Secretary is candidate for Mayor of the City of Bethlehem, on the Republican ticket. The Democrats have almost 1000 advantage on the registration. Figure for yourself how busy he is campaigning and forgive him if he has overlooked anything.

Lehigh University

BY CATHERINE DRINKER BOWEN

CHAPTER VI TEACHERS

A professor of the writer's acquaintance had been teaching upper classmen who were comparative strangers to him. After about three weeks of lecture and recitation sessions, he was approached one day after a lecture, by a student whose face bore evidence that he was harboring some grudge against the professor. In his hand the young man held the text book required in the course. He opened it, and holding it toward his teacher, he said in injured, indignant tones: "Professor, what you lectured about wasn't anywhere in the book!"

It wasn't in the book! No wonder the student felt imposed upon; precedent had been departed from. Somebody was trying to make him think! The pursuit of a diploma had been to him a question of books, memory, and the resultant grade marks. The gaining of ideas, of new points of view, the word *inspiration*, did not enter into the vocabulary of his college course. And was it all his fault? Experience had taught him to regard a teacher as the man who translates the words out of the book into easier English for the edification of the student, and for the easing of his mental processes. He tolerated that Ph.D. as a fossil natural to the antiquity of his academic surroundings. Why should he look for anything more enlivening?

"Professor, what you lectured about wasn't in the book!"

A Ph.D. may be a useful thing; a book certainly is. They are both marketable; but why make a fetish of either? Remember the words of the preacher, written three thousand years before Gutenberg invented movable type:

"And further, by these, my son, be admonished: of making many books there is no end, and much study is a weariness of the flesh."

Thomas Brackett Reed, for so many years Congressional Representative from Maine, nicknamed "Czar" Reed on account of his autocratic methods when Speaker of the House, a man of wide reading and a lover of good literature, knew what books were for. He wrote one himself on parliamentary procedure; it was called "Reed's Rules." One day Reed overruled a point of order made by a very sharp Democratic opponent. The latter discovered that Reed in his book had taken a different position. Thinking he had Reed at his mercy, the member paraded to the desk, book in hand, and pointing triumphantly to the passage, asked the Speaker to read it. Reed took the book, looked at it, and turned to the House. "Oh," he said calmly, "the book is wrong."

"You cannot really teach much to anything but a monkey or a parrot anyway," a teacher once remarked. "With human beings, you must inspire to learning."

Books and professors! Their letters should spell the same word—"Inspiration." "Only so much do I know," said Emerson, "as I have lived." Woodrow Wilson believes that the only true service the college can render the student is to "release and quicken as many faculties of the mind as possible."

Judge then by these standards, and which of Lehigh's professors stand out from the past as great men and great teachers?

From the long list of men who have served on her faculty since 1865, it is difficult to pick and choose. Of which shall we speak? Lehigh has had eminent scientists, famous throughout Europe and America for their contributions to science: Doolittle, Merriman, Alexander MacFarlane, Dr. Joseph Barrell, W. S. Franklin; and, of later years, McKibben, Richards, Benjamin L. Miller.

Then we are minded of those who, beloved throughout the town, did so much to kindle a friendly spirit between town and university. Harvey Housekeeper, Stanley Goodwin,—both Chief Burgesses of Bethlehem; and, contemporaneous with them at Lehigh, William T. Roepper, Coppée's first professor of Geology and Analytical Chemistry. One of the things which Professor Roepper did for the Lehigh Valley was to discover the Saucon zinc deposits. His reputation as a scientist and a musician extended far beyond the Lehigh Valley; back, indeed, to the land where he was born. He was a Moravian. There is a line in an old University paper about the "matter-of-fact authorities of mathematical Lehigh." Kindly Professor Roepper, bending his grand old head over the organ keyboard of the Central Moravian Church, was one who belied that classification. Severin Ringer was another, and so was Arthur Meaker, with his boxing gloves and his bicycle.

Then, thirdly, come the names of those who were preeminently *teachers*; who loved teaching for its own sake; who did not find themselves with a "Professor" before their names for any other reason than that they loved to teach. When they learned a thing—and they were always learning something—they just had to tell it to somebody else; and they knew how to do it. They are the men who have built Lehigh from its foundations; who spent the greater part of their lives in her halls,—Coppée, Chandler, Frazier, Ringer, Harding, Merriman, Klein, E. H. Williams, Blake; and many others whose names we are tempted to linger over when they confront us on every page of Lehigh's records.

Passing beyond those pioneers who ventured with Coppée to Asa Packer's new university—one small brick house on the edge of a mountain forest—we come to the year 1871, when the Founder gave an additional half million dollars, and made the tuition free. A general rearrangement of the teaching force took place. Coppée cast about for new professors. William H. Chandler came in that year as a successor to Professor Wetherill—came to stay thirty-five years. During those years he was twice Acting President of the University, in ninety five and in nineteen hundred and five. He supervised and directed the building of the Chemical Laboratory; he served as Librarian for thirty years, doling out "Alcove privileges" with a cautious hand. Also he is reported to have overworked his students woefully; but somehow or other, whether it was through those twelve-hour laboratory sessions, those pre-examination Saturday afternoons spent in the Saucon and Packer Hall laboratories (the Chemical Laboratory was opened in 1884), whether it was owing to all this labor or in spite of it, Professor Chandler accomplished wonders for his Department. Mrs. Chandler in 1920 established four annual prizes, one for each class, of twenty-five dollars each, named by the Faculty the William H. Chandler prizes in Chemistry.

At Professor Chandler's death in 1907, the department fell to the charge of William B. Schober; whose place was in turn assumed, in 1912, by Dr. H. M. Ullmann, able executive and efficient administrator.

In seventy-one Hiero B. Herr, who since E. W. Morgan's death two years before, had held the position of Professor of Mathematics and Mechanics, became Professor of Mathematics and Astronomy, relinquishing his former Engineering duties to Charles McMillan, who came from Rennselaer Polytechnic Institute as Professor of Civil and Mechanical Engineering.

Another of Dr. Coppée's professorial catches of 1871 was Benjamin West Frazier, who came to take charge of the Department of Mining and Metallurgy. He was one of Lehigh's hardest workers; he taught an unbelievably long list of subjects; among them the valuable one of Economic Geology. His peculiar interest was Mineralogy, and he collected while at Lehigh much material for use in that department. Indeed the amount of information he absorbed in his leisure hours came as a trial to his students, for in his eagerness to impart it to them he used to deliver his lectures at an appalling rate of speed. The *Epitome* of 1881 boasted that Lehigh had a Professor who could "deliver 600 words per

minute," and declared facetiously that "A Junior appearing in chapel with his arm in a sling and his wrist out of joint, explained that he had not been celebrating or hitting anything, he had only been trying to take notes at one of Professor Frazier's lectures."

E. H. Williams, who in 1881 took charge of Professor Frazier's mining course, says of Professor Frazier that "his standard of work was so high and his examinations so rigid that the faculty and students were satisfied that when a name was reported by him as a candidate for a degree, that its owner was very well prepared."

Professor Frazier died in his house on the campus after twenty-five years of service; years during which he had not only enhanced greatly the reputation of the institution he served, but he had gained the love and esteem of all about him, particularly his fellow members of the faculty. He was not in any sense a "stage professor," one of those absent minded, bespectacled beings supposed to represent the type—but which have existed in large enough quantities to tempt critical citizens into describing a faculty as a "zoo." Benjamin West Frazier bore a distinguished name in a distinguished manner. Always well dressed, well groomed (these are characteristics less rare among academics now than fifty years ago), handsome, pleasant of voice, with a courteous bearing which sprang from the sensitive nature of the man, he was welcome everywhere. His writings on scientific subjects were profuse. After his death Mrs. Frazier donated his technical library of a thousand books to the University.

In that same felicitous year of seventy-one, Dr. Coppée found Severin Ringer. If the latter gentleman, when he was in jail during the Polish revolution of 1847; or later, when, seeking another such experience, he had hurried off to America; if, during those incidents so customary to the life of a Pole, anybody had told Severin Ringer that he was destined to spend thirty-five years teaching languages at Lehigh University, he would have been a surprised man. Besides French and German, Professor Ringer taught history for twenty years, until the arrival, in 1898, of John L. Stewart. There hangs in Drown Hall a portrait of Dr. Ringer, painted by Kenneth Frazier (Lehigh, '87), son of Professor Frazier, presented in the name of the New York Lehigh Club. It portrays its subject dressed in his academic gown, his left hand holding his cane, his handsome head held well up, his waxed moustache bristling, his whole appearance well ordered and spirited. As the writer gazed at it, it occurred to her that Ringer, in his prime, would have been entirely willing to undertake the teaching of any subject which Dr. Coppée might have suggested, from Polish politics to the rule of three. The college publications during the eighties could not seem to resist making comments upon him—always complimentary—

"Professor Ringer, so profoundly read
The very library seems in his head."

In his upper classes he was wont to discard the regular recitation forms and talk to the students in French and German. The *Burr* records these talks as being "instructive and entertaining." Anything described by undergraduates as being "instructive and entertaining" must have had character of some sort lurking in it. The year of Ringer's death, 1906, Robert Sayre, Lehigh's great friend, established the Frazier and Ringer Memorial Fund providing surgical and medical attention to students.

"'And away goes the theory with the first irreconcilable fact,' so says our genial Professor of Physics." This line from a *Lehigh Epitome* presents H. Wilson Harding in a happier way than would be possible by any second-hand description. The writer never saw Professor Harding, but she can picture his delight as he shook his cheerful scientific head, with its goatee, its bushy eyebrows, and gave voice to his unanswerable creed, "And away goes the theory with the first irreconcilable fact." He came to Lehigh in 1872 as Professor of

Physics and Mechanics, and held this chair until eighty-three, when he relinquished the charge of the Mechanical department to Joseph F. Klein, and devoted himself to Physics and Electrical Engineering. It was Harding who started the course in Electrical Engineering, at first a one-year course, then lengthened to four years of Electrical Engineering and Physics; then, in 1887, established as a full course—the course guided, from ninety-five to ninety-seven, by the strong hand of Alexander MacFarlane, M.A., D.Sc., LL.D.

Of the following verses, quoted from the *Epitome* of eighty-nine, the first may be familiar because of its source; the other, evidently from the pen of an '89 editor, while rather erratic as to metre and rhyme, cannot be omitted. One refers to Professor Harding—

“A merrier man
Within the limits of becoming mirth,
I never spent an hour's talk withal.”

The other:

“And do not pass without regarding
The lectures of Professor Harding,
So lucid, fresh and admirable
And entertaining as a fable,—
But then his lectures have that zest
Which springs from his own interest
In things of which he has to treat,
Light, electricity and heat.”

Professor Harding was the uncle of Richard Harding Davis (Lehigh, '86). While Davis was an undergraduate he launched his first literary ventures—one of them in the form of a brochure. Who published it, and what it was about, we know not, but we do know that to the surprise of Davis' friends, and to the delight of the unknown young author, the first edition went off like hot cakes. After Professor Harding's death, somebody came across the entire edition piled in a closet among his papers. From a conviction of the literary ability of his nephew, and a desire to encourage him—or merely out of the kindness of his heart, the professor had quietly bought up every copy of the young author's publication!

In 1897, when Harding resigned his position, he received many tributes of affection from the Faculty and from his old students. It was said that through his resignation Lehigh lost a distinguished man of science, “a faithful teacher and friend who has endeared himself to generations of students.”

A contemporary of Dr. Harding's at Lehigh was Charles L. Doolittle, the great astronomer, who came in 1874 to teach Mathematics and Astronomy, and stayed for twenty years, when the University of Pennsylvania offered him the Flower Professorship of Astronomy. He wrote notable works as the result of his telescopic star gazing—among others, his “Practical Astronomy” received much commendation. He was a severe master—the Mathematics Department early established its reputation for sacrificing young lambs on the altar of Olney, the deity of Calculus. One of the college papers of eighty-eight reports that “Professor Doolittle lately informed the Sophomores that on account of their seeming inability to learn any mathematics whatever, it would be necessary to omit twenty pages of the hardest part of Davies' Analytical Geometry.” What pangs this omission must have cost the Professor we can only imagine.

There is a picture, a memory, of Lehigh which the writer will carry with her always. It is that of Professor Meaker walking up the Campus wheeling his bicycle. The writer started her daily journeys down the hill to school at the age of eight, and kept them up for many years; and morning after morning, on the path leading up the Campus between the first two faculty houses, she would meet that long figure, clad in a blue suit, bicycle clamps about his ankles, pushing his machine up the hill towards Packer Hall. His hat had a way of perching on his head which made him appear even taller than he was; when he met the writer he would doff his hat in a solemn, measured way which gave her the profoundest

satisfaction, she not being used to receiving so much attention from such heights. Whether she ever met him in the afternoons, when she was laboriously climbing up the hill and he was coasting triumphantly down, she does not remember. Perhaps the necessary omission of the hat ceremony took away the thrill.

Arthur E. Meaker was born in 1848. When fifteen he joined the army, and a year later went with Gray's second division of General Hooker's Corps to Stevenson, Alabama. He took part in the siege of Atlanta, and was among the first to enter Savannah on the morning of its evacuation. He was mustered out in 1865, and after six years of farm, factory and mill work—during which time he managed to attend school in the winters—he entered Lehigh University and was graduated in 1875. After two years with the Pennsylvania Railroad he returned to his Alma Mater as Instructor in Mathematics, a successor to Lamberton, and continued in that department until his retirement in 1912, when he was appointed Emeritus Professor of Mathematics. There are current so many stories about Professor Meaker that the telling of them will have to be left to his former students and colleagues—his boxing bouts with his fellow teachers, his novel but effective methods of discipline. One of the most modest of men, he left an impression which will not soon be effaced. In 1918 Lehigh University conferred upon him the honorary degree of Master of Science.

In 1878 came the man who was to build up the Civil Engineering Department, and in so doing was to strengthen Lehigh, root and branch; to create for her ideals which she has ever striven to maintain. Mansfield Merriman came to Lehigh in 1878, succeeding Professor A. J. DuBois. He threw himself immediately into his work with all the zeal and imagination he possessed—and he was well endowed in both directions. Four years after he arrived at Lehigh, we find record that "one-half of the Junior technicals belong to the school of Civil Engineering." With very meager equipment (the Fritz Laboratory was not erected until 1910), by his own genius he trained and sent forth year after year an increasing number of competent engineers. His activities outside the University were numerous. He was appointed Assistant Editor of the 1892 revision of Johnson's Universal Encyclopedia, and had charge of all articles relating to Civil Engineering. His book on "Mechanics of Materials" ran through its tenth edition in 1910; his "Treatise on Hydraulics," and "Strength of Materials," were in the ninth and sixth editions, respectively, in nineteen twelve and thirteen. Text books written by him, and also by Alexander MacFarlane, are at the present time advertised by leading publishing houses. At various times he acted as vice-president and president of the American Association for the Advancement of Science; the Society for the Promotion of Engineering Education; as American Secretary for the International Association for Testing Materials. He was on Mayor Seth Lowe's New York bridge commission which supervised the Williamsburg Bridge project in 1902. He had a large, public spirited view, and one to advance the broader interests of the University. For instance, in 1901 he sent a circular to all the County Commissioners in Pennsylvania offering to test their cement for them free of charge. Nevertheless he gave the best of his genius to teaching. His courses were vital—alive with the inspiration which came from his own broad view. He showed himself a man of tremendous force; quiet, contained. On looking at his picture one is impressed with the calmness of his expression in a face which reveals behind the quiet, such a storm of energy and strength. In 1913, Lehigh endeavored to express the debt she felt toward Mansfield Merriman by conferring upon him the degree of Doctor of Science.

Merriman had as a classmate at Yale, a man very different from him in character, who was to join him on the teaching force at Lehigh University. Born in Paris in 1848, Joseph F. Klein eventually found himself at the Sheffield Scientific School, Yale. In 1881, leaving an Instructorship at his Alma Mater, he came to Lehigh to take up the teaching of Mechanics, relinquished in that year by Professor Harding. When he died thirty-seven years later—having given all those years to Lehigh—he left hundreds of friends who realized that when Lehigh

lost Professor Klein, she lost one of the warmest, kindest spirits which has ever brightened her halls. He used to spend his days—we might almost add his nights—at the University. Students happening to be up so early, or perhaps so late, as five o'clock in the morning, would meet Professor Klein cheerfully plodding up the hill. He was so sympathetic, so approachable. "Yes-yes-yes, yes-yes," he would nod rapidly; "Friend, Friend!" What person who knew him does not remember his "Friend, Friend!"

It was Klein who instituted, in 1903, the short lived course in Marine Engineering. Two tributes to Professor Klein were so eminently fitting that we cannot resist mentioning them. The class of ninety-six presented him with a roller top desk. Somehow the corpulence of a roller top desk and Professor Klein seem perfect complements. In 1907, to celebrate the twenty-fifth anniversary of his residence at Lehigh, more than one hundred and fifty alumni and students of his Department gathered at Williams Hall and gave him a Surprise Party. Who could be a more delightful subject for a Surprise Party than Professor Klein? His portrait, presented by his students to the University, now hangs in Drown Hall. If these pages allowed of pictures, one of the first to be inserted would be that of Professor Klein, for besides having decorative value—his was a magnificent head—his photographs have escaped that dull blankness common to most records of the camera, and the gentleness of his nature seems to beam out from those kind grey eyes behind their glasses.

The same year that brought Joseph Klein to Lehigh, brought one who was to be for many years a close friend of the student-body. Edward Higginson Williams was the son of Dr. Williams, of the great firm of Burnham, Parry and Williams, now known as the Baldwin Locomotive Works. He succeeded B. W. Frazier as Professor of Mining, and Dr. James P. Kimball, who had accepted the appointment of United States Director of Mints, as Professor of Geology. He was much interested in Biology, and taught that subject for over twenty years. In 1902 the regular course in Biology, Zoology and Botany was established, and R. W. Hall was brought from Yale as Instructor in those subjects; taking full charge of the course after Professor Williams' resignation in 1904. Dr. Williams for some years bore all the expenses of his department, and equipped it with apparatus to the extent of four thousand dollars. Williams Hall stands as a testimonial to his generosity. He threw himself enthusiastically into all student activities, particularly athletics; and there is hardly a record of a game or contest which does not bear the name of E. H. Williams as judge or referee. His sketch of Lehigh, the "Twenty Year Book," he extended and republished in 1892. He was the recipient, in 1913, of the degree of Doctor of Laws from Lehigh University.

He was succeeded in the department of Mining Engineering by Howard Eckfeldt—one of the few Pennsylvanians on the Faculty—who, after receiving from Lehigh University the degrees of B.S. and E.M., had been employed for four years by the Mayapel Copper Company in Mexico, and who has had wide experience in practical engineering work. He is recognized as one of the most efficient teachers of mining in the country. Known to his students as "Skipper Eckfeldt," he is looked up to by them as the captain whom they trust and willingly follow.

Another man to leave written records of the University was E. M. Hyde, whose history of Lehigh, written for the class of ninety-six, was afterward published independently. He succeeded H. C. Johnson, of the Latin Department, who resigned in 1888 to become President of the Boys' High School in Philadelphia. Dr. Hyde was at Lehigh for ten years, and he, with his collaborator, W. A. Robinson, of the Department of Greek, did much to refute the criticisms then being made concerning the preponderance of scientific and technical studies at Lehigh. Professor Hyde was University Extension lecturer, and used to travel all over the country—even venturing across the border of the University of Pennsylvania's preserve—to give "talks" on "antiquities." He regaled the Classical Club, the "Agora," the citizens of Bethlehem gathered in the Parish

House of the Nativity Church, with discourses on "Life in Ancient Cities." He was Northampton County's unillustrated Travelogue expert of the nineties, and he spread Kultur with an edgeless knife.

His place was taken, in 1899, by Robert W. Blake. Professor Blake received his degree of Master of Arts from Princeton University in 1887. During the ensuing twelve years he studied at the Princeton Theological Seminary, at the Universities of Leipzig and Erlangen in Germany; he served as Instructor of Greek at Princeton, and as Professor of Latin at Washington and Jefferson University. For over twenty years he served as Head of the Department of Latin and of the Arts College. When he died, Lehigh lost a man whose gentleness and courtesy, whose true scholarship, left an impression upon everyone with whom he came in contact.

Upon his death the College of Arts was taken in charge by Professor Palmer.

The year Dr. Drown took up his duties as President of the University (1895) saw a considerable turnover in the personnel of the Faculty. Three important additions were Thornburg, Thayer, and MacFarlane. Charles Lewis Thornburg came from Vanderbilt University, of which he was a graduate, to take charge of the Mathematics Department, as a successor to Professor Doolittle. He brought with him from Vanderbilt, John H. Ogburn, who has ably assisted him in the Department of Mathematics ever since. During the first two years of Professor Thornburg's regime, the college papers contain numerous announcements, all of a strict and disciplinary character—

"An examination in Calculus will be held every three weeks from now on for all classes, etc., etc., etc."

These notices were at first cautiously applauded in the editorial columns of the papers. Afterwards the bare announcement was thought sufficient. Professor Thornburg has been Secretary of the Faculty for twenty years.

One of Professor Thornburg's staunchest lieutenants is Preston A. Lambert. He has since 1884 continuously demonstrated a genius for teaching, and his friends among the alumni are legion.

William C. Thayer, the second of the ninety-five trio, succeeded Henry Coppée in the English Department and has seen twenty-five years in Lehigh's service. It was the custom in those days to dedicate the annual *Epitome* to whatever member of the Faculty the editors chose to honor. The volumes for the years from nineteen hundred and one to five were dedicated respectively to Professors Merriman, Klein, Langdon Stewardson, Thayer, and Thornburg.

When Dr. Drown procured Alexander MacFarlane as Harding's successor in the Department of Electrical Engineering, he secured a man known on both sides of the Atlantic Ocean as a mathematician. He was born in Scotland, and by the time he decided to leave the University of Texas and come to Lehigh, his name was followed by many formidable hieroglyphics denoting the possession of diplomas and degrees. This illustrious name was erased from the active Faculty list in 1897, through his resignation. It was followed by one of which Lehigh is no less proud, that of William Suddards Franklin.

Professor Franklin came to Lehigh from a college west of the Mississippi, where he said the President consistently ate with his knife. When in 1916 he joined the Faculty of the Massachusetts Institute of Technology, Lehigh lost, and Boston gained, a man of imagination, perseverance,—all the fundamental qualities of scientific genius. He was joint author of many valuable text books: The "Elements of Physics," "Elements of Mechanics;" of Calculus; of Electrical Engineering; of Electricity and Magnetism; of Alternating Currents, are some of them. Barry MacNutt, who succeeded Dr. Franklin as head of the Physics Department at Lehigh, collaborated with him in the preparation of most of his works. The name of Rollin L. Charles, Associate Professor of Physics at Lehigh, also appears on the title page of a number of these works.

Franklin and MacNutt on "Light and Sound" contains in its introduction a sentence which reveals the source of Dr. Franklin's inspiration as a teacher.

"The proper development of science," it reads, "must be founded to some extent upon and grow out of a simple living interest in science on the part of all plain people."

This conviction carries the more weight because it grew out of years of close application to study by a man possessed of a demon for accuracy and scientific exactness. Not for him are published those pleasant, predigested books so prolifically conceived by pseudo scientists with journalistic minds, concerning the romance of the atom and the animalcule. And Dr. Franklin is endowed with those very qualities which allow him to impart to "all plain people" this same "living interest in science." His enthusiasm, his charm of manner and address, have made him sought after as a lecturer all over the country.

To revert once more to the intimate: Professor Franklin has appeared to the writer, since her childhood days, as a man of marvels, a miracle worker. When she was about nine years old he took her one day into that house of magic, the Physics Laboratory. Leading her upstairs to a long room, full of strange and awful machines and devices, the Professor walked over and touched a match to a gas jet, from which there sprang immediately a tall, hissing flame.

"Now you stand over there," he directed; "and go smack, smack with your lips, and watch this flame,—and it'll just up and answer you!"

The writer complied, and thus was early introduced to the mysteries of the sensitive flame. After this, by hanging around the door at auspicious times, she was allowed to witness more magic: the magician, by drawing the edge of a violin bow across the edge of a steel plate on which sand was sprinkled, could make the sand form pleasing patterns, and,—Oh crowning delight! The Professor one day let her blow some glass and take home the result.

William Esty in 1903 became head of the Department of Electrical Engineering. He was brought to Lehigh from the University of Illinois by Dr. Drown, and since 1913 has ably headed the Department.

Of the efficient and enterprising chief of the Department of Physical Education, Professor H. R. Reiter, we shall have occasion to speak in a later chapter.

If the reader has ever glanced through the pages of "Who's Who in America," he must have noticed among the "Ms", two of the most renowned scientists Lehigh has numbered on her faculty. Frank Pape McKibben resigned his professorship in the Massachusetts Institute of Technology in 1907, to succeed Mansfield Merriman in the Department of Civil Engineering at Lehigh. Besides his academic duties, Professor McKibben has been employed in many capacities in the world of engineering achievement. In 1899 he was Assistant Engineer of the Boston Elevated Railway Company; he was a member of the Pennsylvania Railroad Commission from 1901 to 1907; Consulting Engineer of the Pennsylvania Water Supply Commission; and, in 1918, Supervisor of Technical Training in the United States Emergency Fleet Corporation. "Who's Who," after enumerating various biographical facts—such as "Theta Xi, Republican, Presbyn., Prof. civ. engring., Lehigh U., 1807-19"—adds, alas!—"same, Union Coll., since 1919."

The second "M" is Benjamin Leroy Miller, Professor of Geology at Lehigh since 1907, who, like many good things, among them the hero in the poem and W. S. Franklin, came out of the West. Before he took his Ph.D. at Johns Hopkins, Dr. Miller was educated at Morrill College, Kansas; Washburn College, Kansas; the University of Kansas, and the University of Chicago. After this, having taught biology and chemistry in Penn College, Oskaloosa, Iowa; and geology at Bryn Mawr. Lehigh engineering students can present no problems he cannot solve. He has written numerous reports on the results of geological survey, published by the United States Geological Survey, and the geological survey of Iowa, Maryland, North Carolina, and Pennsylvania. The extent of his experience in geological research is also proven by the published results of his surveys in the Bahama Islands, and in South and Central America.

In 1886, letters began to filter into the Lehigh *Burr* urging the establishment of a department of Political Economy. These appeals continued for ten

years. Edward T. Devine in 1894 gave a series of lectures on economic subjects, and Dr. Drown later added to these himself. The autumn of his inauguration as President, Dr. Drown, in a speech before the New York Lehigh Club, said:

"I shall ask the trustees in the near future to grade a full professor of history and political science, to round out our course in this direction."

This promise was fulfilled three years later, when John Lammey Stewart, a graduate of the University of Pennsylvania, who had lectured through the preceding winter at Lehigh on Economics and History, was in the autumn of 1898 made Professor of Economics, History, and Politics; and a course in Political Economy was made a part of every technical course in the University. No one ever went to sleep in one of Professor Stewart's lectures. Andrew D. White, the first President of Cornell University, and one of the most powerful influences in the history of American education, declared that the object of education is to set young men's minds in fruitful trains of thought. Anyone who does not come out from Professor Stewart's lecture room roused to some train of thought or emotion,—laughter, despair, anger, joy,—or inspiration of some sort, is indeed lacking in that fertility of mind which alone makes the student a teachable being.

Before we close this chapter with the name of that scientist whose long connection with Lehigh has spread far and wide the honor of her name, we are reminded of one whose inclinations and accomplishments lie very far from the field of aluminium and eutectic mixtures. Of that man who has labored with so much sincerity, with so much true love for the subjects he teaches, and with so much success, to keep up the cultural end of Lehigh's balance,—Philip M. Palmer.

Professor Palmer came to Lehigh in 1902, as Instructor in Modern Languages. At Severin Ringer's death, in 1906, he became head of the department; and in 1909, finding that his interest lay most of all in the teaching of the German language and literature, he turned over the Headship of the Department of Romance Languages to Charles Shattuck Fox (under whose management it has prospered greatly), taking upon himself the charge of the Department of German.

In a later chapter we shall have occasion to mention the activities of those Lehigh professors who, stepping outside the academic circle, have exerted themselves in the interest of their fellow townsmen of Bethlehem. The list of these is long, and their activities vary from supporting a Baby Milk Station in the foreign quarter of the town, to acting as members of the Bethlehem School Board. If there is a High School debate that needs a judge; if a new club is being formed, or a new educational idea needs inspiration, it seems as though the name of the Professor of Philosophy and Psychology was always called. Percy Hughes, born in Peshawur, British India, somehow found the path leading halfway round the world to the University of Minnesota, and after teaching there, and at Columbia University, and at Alfred University, was discovered in 1907 teaching at Tulane University and brought to Bethlehem.

In a preceding paragraph we mentioned the word "Aluminium." That word will cause any metallurgist from Northampton County to Freiburg, Germany, to whisper, "Richards." There are plenty of other reasons why they should remember Joseph William Richards, but in reviewing the biography of that scientist we find that the name of his first love was "Aluminium," and that he was true to that name for many years after he wrote the treatise on aluminium which was heralded as the first work on that subject published in English. That was in 1887, the year after he took his A.C. at Lehigh University. In that year began his teaching experience with his Alma Mater, for he became Instructor in Mining and Mineralogy under Professor Frazier. During his instructorship he secured his M.S. and his Ph.D. from Lehigh. In ninety-seven he was made Assistant Professor. In 1901-2 was established the course in Electro Metallurgy, being at that time the only practical course of its kind in the country; and upon Professor Frazier's death in 1903, Dr. Richards took charge of that department.

During his thirty-four years connection with Lehigh, Dr. Richards has been an important factor in enterprises of a scientific nature all over the world. In 1897 he represented the Franklin Institute at the International Geological Congress in Russia. He has been a member of the board of awards, and of chemical and metallurgical juries in expositions since the National Export Exhibition in Philadelphia in 1899. He is a member of important societies in England (the land of his birth), France, and Germany. During the world war he played an important part. He was a member of the most eminent group of practical scientists ever assembled in America: the United States Naval Consulting Board.

On October 12, 1921, Dr. Richards died suddenly and Lehigh sustained a loss that seems irreparable. At this writing it is not known how this vacancy will be filled.

ALUMNUS ADDRESS TO GRADUATES

Delivered by Walter S. Landis, '02, at Commencement, June, 1921

This occasion recalls to my memory a similar celebration of some nineteen years ago in which I played the part of a prospective graduate. It even carries the parallelism still further, for I also spoke at that time, though only after some argument with Professor Stewart as to just why I should be penalized in such a manner. But the intervening years have brought about a great change, for what I then considered a most unpleasant task, I now hold as a very great honor,—my speaking for the Alumni on this most formal occasion.

At that previous Commencement I felt that someone had made a most serious mistake in naming this day we are now celebrating. I was then certain that it should have been called "Completion Day," for had I not completed all the various tasks imposed upon me during the previous four years; was I not through college; had I not been made an engineer and had the certificate of a great University to prove it? I wonder how many of you feel the same way now as I did then.

But the nearly two decades that have passed since my graduation have taught me the wisdom of the present designation of this day. Its name was selected by learned and experienced men who do not make such mistakes in nomenclature, for I now know that I had at that time completed nothing, and today I hesitate to even start anything. I believe I am not alone in this feeling.

The products of higher education have been recently severely criticized, and the attack most widely discussed in our newspapers and magazines largely because it emanated from a very prominent person. I presume you have attempted to follow more or less closely the first outbreak, and I trust also the latter and more mature replies that are still appearing in our press. I suppose all of you tried to measure yourself by the standards set up by the noted critic, and you wondered as to just what Lehigh had done for you

in the past four years spent in her classrooms and laboratories. Certainly you found something wrong somewhere, but probably could not satisfy yourself as to just where the trouble lay. Let us, therefore, look into this matter more in detail, particularly as it arose at that very critical period just before your graduation, and when little remedy could be applied, if such was really needed.

A shipping clerk in a certain phonograph factory probably should know where Emaus is located. The stenographer who fills out the stereotyped labels that are pasted on the phonograph records made in this same factory, may be expected to remember the name of the author of some ancient song. But just what has that to do with a certain cement plant not so many miles east of here, when faced with a serious failure of a large and highly specialized piece of machinery, the breakdown of which would curtail production seriously and always at a time when the stockholders are loudest in their clamor for maintenance of dividends?

If the shipping clerk does not remember where Emaus is, he can purchase a railway guide for a few cents, that will not only locate the town, but even tell him how to get there. If the stenographer has for the moment forgotten the name of the author of the song, she can turn to a certain little book bound in red, the publication of a rival phonograph manufacturing company, and not only find his name, but probably also the color of his eyes and the size of his shoes. The poor cement mill superintendent, most likely the product of the much criticized college, cannot turn to a book or a guide for help in his emergency—he must rely entirely on the education, ability and experience he has accumulated and probably very largely based on the foundation laid in the much criticized college.

The difficulty is that our noted critic of the college has lost most of his vision

in his old days and is looking for shipping clerks and stenographers among college graduates. Fortunately our institutions of higher education have made no attempts at turning out that class of material, and I personally hope they never will.

I do not wish to be misunderstood in not showing proper appreciation for a broad general education, but other institutions than Lehigh are provided for furnishing such training. For example, the Public High Schools are better equipped to turn out a product which will measure up to our critic's standard than the average college. The University has an entirely different message to deliver. The world in the future will be just as careful to continue to rate the product of the institution of higher learning on its reasoning powers and not on its memorizing abilities, and I believe we should not further concern ourselves with this bit of cleverly disguised personal advertising.

But let us return to our study of the meaning of the day we are here celebrating and the relationship of your past few years to what lies before you in the future. The term "Higher Education" is so broad and so indefinite that one cannot measure it with the precision we desire. As a consequence specialization of all advance training has been the rule from time immemorial. Even King Solomon, reputed to be the wisest of all men, had to borrow a highly specialized engineer in order to complete the Temple. King Solomon's specifications of the type of man wanted is a marvel of cleverness and precision. As a result educational institutions have had to meet this specialized demand ever since they started, and I believe that the specialization will continue to a greater degree in the future, limited, however, by some very curious and interesting conditions.

Education is a function of two independent variables—the student, and the institution. If we will class all personally predetermined and planned activity as "intention," and all else as "accidental," the student presents practically a complete accidental front to the institution. The relationship of the institution to the student, on the other hand, is nearly one hundred per cent intentional. What is the result of this relationship?

The preparation of the student for admission to the institution of higher learning is not only largely accidental but is controlled or supervised only to a very slight extent by the institution. For example the student may be sent to college, his choice of course of study, or of the institution may be entirely outside of his own predetermination. On the other hand the institution, its founding, its management and its operation, is the result of most careful planning; its supervision is in the hands of the ablest Board of Trustees the district can furnish, and

is usually formally organized and charted. The courses of study, the methods of teaching, the equipment, all are the outward manifestation of the working of a highly skilled and organized faculty, who in turn are in reasonably close touch with industry as well as like bodies from other similar institutions. I think all of us who have an intimate knowledge of these details, would hesitate to severely criticize the institution for any apparent shortcoming of its product. Only in rare cases have Board of Trustees or Faculties failed to function and so enable one to place some blame on the institution.

Students apply for admission to our colleges and universities with but little more than the most general knowledge of the specific kind of education they desire to obtain. They have little information concerning the future fields of activity to which a specialized course is presumed to fit one. Few know at the time of admission what opportunities for employment there will be presented at the time of graduation or even until after the major part of the scholastic work has been completed. Look carefully through the register of Alumni and note that the complex relationship existing between the course of study pursued and the position afterwards occupied. How many students on entrance have taken into account, aptitude, physical strength, family ties, commercial geography at the time they make the choice of their course?

Now the Faculty of the institution of higher learning realizes these defects in the system and they have had to meet the contingency presented, for the product that is turned out must meet the approval of the customer—the employers,—and stand up well with that from competing institutions. These men do their work remarkably well in the face of the difficulties, and I consider that the work of the average Faculty is equally or even more difficult than the technical management of most corporations, and the results obtained rank above the expectation of a corporation management.

Take your own case: the University accepted you as a Freshman with almost no knowledge as to your adaptability to the work in front of you. No commercial plant would purchase raw materials on such a basis. The Faculty worked with you for four years, their only guide as to what you really wanted being the course chosen by yourself. For ninety per cent of that period of time you really did not know exactly what work you would take up on graduation, which stated in other words means that no one knew what specifications you would ultimately have to fulfill. Yet if you should later fail, the reputation of the institution and of the Faculty will suffer with you. Now what corporation would take raw material, practically without specification, work on it for three years with practically no knowledge as

to what it was trying to make and then guarantee to a greater or less extent the product and stamp it with its trade mark? I again repeat that in the face of such difficulties, too much credit cannot be given the teaching force for the courage, the tenacity of attack, and the keen appreciation of the difficult problem they always face with each new class. And yet I have heard the teaching profession looked upon as requiring less skill and activity than regular professional work. My opinion is that the average University Faculty will give far better accounts of themselves if transformed into corresponding commercial positions than the commercial man if put into the University Faculty.

Today you leave the direct charge of the institution. What has it really done for you? The answer may be stated briefly: You have been prepared to begin the real specific education of yourself for the specialized line of activity you are now taking up. In other words Lehigh has been merely a preparatory school of a higher order. In the laboratories you were taught to govern the use of your hands by your head, yet no attempt was made to make a skilled mechanic out of you. In the classrooms you have studied text books and recited therefrom, essentially for the purpose of teaching you the principle of exact reading. You have heard lectures to get you into the habit of careful listening, for the conference and the notebook will play an important part in your future work. It is true that the text and lecture subjects were closely related to your chosen course, but that was largely in economy of time. You will find that you will use different books in this same line of work as your future education advances.

You were introduced to modern languages, very formally it is true, in order that you may learn that other nationalities are also actively performing, and one must study his competitor's methods at first hand. Economics and business administration have been touched upon. You will pursue these subjects much further in your future work, for no engineering project of any large scale is carried out for the sake of either itself or the engineer. There is a commercial necessity behind every undertaking.

You have studied your own language and literature. Unfortunately I consider your preparation along this line to be very inadequate. I wish that every subject taught in the university could have been made an adjunct of the Department of English, for such is the importance of good expression and precise writing in your future career. In these days of complex business organization the individual disappears. He operates only through superiors, inferiors or equals. Adequate means of accurate communication must be established, as by confer-

ence, correspondence, reports and orders. Knowledge that cannot be accurately and concisely passed along these channels is of little or no value to you. The mastery of English is going to be one of the most difficult parts of your future self-education, largely because, as I said before, your preparation has been inadequate.

I believe now that without unduly prolonging my argument, that you will agree with me that Commencement Day has been properly named. You are not engineers or business men, for the special studies you have pursued were merely examples used to conveniently illustrate methods. Your real engineering and commercial education will begin with today.

The "accident" of four years ago has by this time been wrought and refined by the institution and is now ready to take definite form and direction. In other words it has now become an "intention." In the future every day will be an examination day. There will be no re-examinations, and repeaters stand very small chances. The day of limited Roster has passed for the fixed week of forty-four or forty-eight or fifty-four hours belong to the mechanic and the laborer and the undergraduate, and will be no part of your existence. You will continue to take home your books and study your lessons as a part of your daily work.

Lehigh has done much for you in the past four years. She can assist you greatly in the future. As an Alumnus you will be a partner functioning through your Trustees and Advisory Board. Above all, keep in close touch with your Alma Mater, and play the game hard and fair.

"BOB" LYON, '05, HAS HIS PRIVATE BRAND OF LIGHTNING

The "Sheet Metal Worker" of June 10, 1921, has as its leading article one entitled "Tests That Prove Metal Roofs Protect From Lightning." This article tells of the experiments of Lyon, Conklin & Co., of Baltimore, Md., (of which company Robert H. Lyon, '05, is Vice-President) have made to prove the value of metal roofs in protecting buildings from fires caused by lightning. In these experiments they use an electrical outfit which will generate a flash of lightning with a current of approximately 1,100,000 volts, and miniature barns are built covered with various types of roofs and then exposed to the lightning flash. Pitch and slag, asbestos shingles and slate roofs offer no protection, while in the case of metal roofs the lightning runs across the roof and down the copper leader and leaves the barn uninjured.

COLLEGE AND ALUMNI NEWS

FOOTBALL

At this writing, which is just after the W. & J. game, where Lehigh sustained the second defeat of the season after playing a most ragged game, the college is very blue over our prospects for the remaining games. But actually there is no reason for us to feel so depressed. Considering that we started the season with a squad composed largely of green men and at the same time inaugurated an entirely new coaching system and an absolutely different style of play, the results so far have really been better than we had a right to expect. Susquehanna and Rutgers were beaten and Penn State's great team, ranking with the best in the country, was given a real battle on their own grounds. Our team was far from good condition when it met W. & J., and an injury to Cusick early in the game weakened the line still more. In spite of this, W. & J.'s veteran backfield, including such stars as Erickson, McLaughlin, West and Brenkert, had a hard time to make ground against us. The final score of 14 to 7 was really better than we could hope for. However, it is natural after a ragged exhibition to forget that it was a green team playing its first home game of importance and in consequence nervous and rattled. The thing to bear in mind is that we have an almost superhuman task this year to beat Lafayette's wonderful team. Therefore it would have been most unwise to try to bring our team to top form for any October game. The coaches are showing the best of judgment in merely taking each game in our natural stride, using the schedule to teach the men football. Only by playing against strong teams can our boys gain the experience necessary to season them for the gruelling contest we must expect on November 19.

Of course it would have been possible to have picked a score of men and by concentrating on them to have made a fairly finished team by this time. But this could only have been done at the sacrifice of any chance to beat Lafayette this year and the further sacrifice of our chances for a fine team next year. Head Coach Glick is looking ahead. He realizes that great teams are not built in a year. He is building for the future. At the same time he is working hard to so prepare his material that when November comes it will be in shape for moulding a real machine for the big game. Give the boys a chance. There is real stuff out on

Taylor Field and patient discriminating coaches. Four weeks is a long time in a football season. Personally I am far more hopeful than I was a month ago. I believe we will have a fine team by the end of the season and one of the best in the country next year.

Lehigh, 22—Susquehanna, 0

On October first, Lehigh opened the season by defeating Susquehanna by a good-sized score. It was a ragged game, marked by fumbling, but it gave Coach Glick an opportunity to use twenty-five of his squad and thus get a line on his material. Of the new men Roth at center, Hoffman, Garman and Arnold at guard, Henderschott and Harms at tackle, Adams and Reed at end, Henchen at quarter and Greer, Storer and Lees in the backfield showed capability. Greer looks like a real comer at fullback, being a heavy plunging back who also possesses speed. Storer punted well and showed forward-passing ability. Hoffman and Henderschott showed real ability in the line while Adams and Reed at end did good work. Henchen, playing at quarter for the first time, showed promise. One more new man should be mentioned,—Bessemer, who is an excellent half, but illness kept him out of the first game.

All of last year's varsity squad who remain in college played except Harry Rote, who was not yet in condition. Captain McCarthy, Springsteen, Cusick, Larkin and Frain played well on the line, while Harper and Lingle did good work in the back-field.

The game was uneventful. Susquehanna gained some ground on forward passes. When Lehigh could hold the ball she gained almost at will.

The line-up was as follows:

Lehigh.	Susquehanna.
Larkin.....	L. E.....Sweeney
Hendershott.....	L. T.....Barber
Hoffman.....	L. G.....Updegraff
Springsteen.....	C.....Stumpher
McCarthy.....	R. G.....Briggs
Cusick.....	R. T.....Rogowitz
Adams.....	R. E.....Gaffney
Henschen.....	Q. B.....Thomas
Harper.....	L. H. B.....Christian
Lees.....	R. H. B.....Benbler
Greer.....	F. B.....Bamson
Lehigh	8 7 7 0—22
Susquehanna	0 0 0 0—0

Touchdowns—Greer, Harper and Lingle. Goals from Touchdown—Henderschott, 2. Safety—Christian. Substitutions—Susquehanna: Raymer for Briggs, Krause for Christian; Lehigh: Cousins for Greer, Frain for Adams, Lingle for Henschen. Storer for Lees, Arnold for Hoffman, Carlisle for Cusick, Reed for Frain, Henschen for Harper, Walker for Larkin, Roth for

Springsteen, Vail for Walker, Fullard for Garman, Harms for Henderschott, Grouner for Cousins.

Officials—Referee: Tom Thorpe, Columbia; Umpire: Davidson, Penn; Head Linesman: J. P. Courtney.

Lehigh, 7—Rutgers, 0

For the third successive time Lehigh blanked Rutgers' big team. The game was played in New Brunswick and despite a cold and rainy day, a crowd of almost 500 students accompanied the team. Of course the band was there, playing as only the Lehigh band can play.

The game was played on a wet and slippery field, which gave Rutgers' heavy line and backs a decided advantage. But Lehigh's defensive work was always good in a crisis and every effort of Rutgers to score was frustrated.

In the first quarter Lehigh advanced the ball largely through line plunges by Greer, Storer and Bessemer to the 27 yard line but were held at this point by Rutgers. In the second quarter, Rutgers outplayed Lehigh, making four first downs, three of them in succession, and twice reaching Lehigh's 25 yard line. Both times being held, they attempted field goals, only to have the ball blocked.

In the third quarter Lehigh broke loose with a well executed offensive. Time and again Bessemer slipped off tackle for good gains, while Greer and Storer helped with line plunges. Several well executed forward passes kept Rutgers guessing and finally, with the ball on Rutgers' 15 yard line, a short forward pass, Storer to Greer, on a fake end run completely fooled our opponents and Greer tore through for the only touchdown of the game.

In the fourth quarter the enemy launched a desperate attack which reached Lehigh's 12 yard line. Then our line showed their quality and on three successive downs Rutgers lost nine yards. A forward pass was tried, which grounded and the ball was Lehigh's and the danger past. A moment or two later the whistle blew and Lehigh's crowd of rooters were jubilant.

The line-up follows:

Lehigh.	Rutgers.
Larkin.....L. E.....	Brennan
Henderschott.....L. T.....	Beckwith
McCarthy.....L. G.....	Feller
Springsteen.....C.....	Kahle
Hoffman.....R. G.....	Raub
Cusick.....R. T.....	Smith
Adams.....R. E.....	Dickinson
Henschen.....Q. B.....	Maloney
Bessemer.....L. H. B.....	Benkart
Storer.....R. H. B.....	Gardner
Greer.....F. B.....	Waite

Touchdown—Greer. Goal from Touchdown—Storer. Referee—J. A. Evans, Williams. Umpire—A. M. Farrier, Dartmouth. Linesmen—H. R. Henage, Dartmouth, and E. J. O'Brien, Tufts. Time of quarters—15 minutes. Substitutions—Lehigh: Roth for

Springsteen; Rutgers: Duffy for Benkert, Summerill for Gardner, Kull for Duffy, Chandler for Kahle, Kingman for Feller, Chandler for Summerill, Eckhardt for Smith, Terrill for Chandler, Keiler for Beckwith, Redmond for Kull, and Lincoln for Raub.

An interesting sidelight on the spirit at the Rutgers game is given in the following clipping from the Newark "Sunday Call," sent the Editor by John L. Becker, '11.

"A fine demonstration of college spirit was displayed a week ago yesterday at the game between Rutgers and Lehigh at New Brunswick. More than one thousand of the Lehigh undergraduates and alumni were on hand to witness the struggle and they cheered their team so enthusiastically that it won a hard-fought game. The Lehigh delegation came down from Bethlehem by train and automobiles and the greater number of the friends of the Pennsylvania institution were on hand for the kick-off. The university brought along most of the fine college band it has and this organization did its share in aiding the team to win.

"It was a fine sight to witness in action the two sections of the extra stands erected for the game. The Lehigh crowd was enthusiastic throughout, and whether the game was going against the team or with it, the constant wave of cheers that swept over the field was an inspiration for the Pennsylvania players. The men on the team did their best, and it was not strange, because they had plenty of inspiration to work hard for victory."

Penn State, 28—Lehigh, 7

Lehigh fumbled against Penn State and twice these fumbles resulted in touchdowns. Because of the strength of the "Nittany Lion" our team seemed to be playing poorly. But actually we were giving a great battle to one of the finest teams in the country. Once in the second quarter, immediately after State's second touchdown, Lehigh took the ball on the kick-off and carried it on a succession of rushes and beautiful forward passes the length of field for a touchdown, Greer scoring after a beautiful pass from Storer. Storer played a great game, his passing being remarkable, and Cusick in the line simply ripped State's plays to pieces. Greer and Bessemer also did fine work in the backfield as did Captain McCarthy and Roth in the line.

"Tiny" Maxwell, in the Philadelphia "Evening Ledger," said that State was only one touchdown better than Lehigh, and as Maxwell was one of the officials of the game he ought to know. Certainly for a green team to have a break against them such as happened in the very start of the first half was the hardest of luck and accounted for their failure to get going until near the end of the half. Immediately after the first kick-off, with the ball on Lehigh's 25 yard line there was a fumble and McCullom, of State, scooped up the ball and dashed over

the line for a touchdown. Then before Lehigh came down to earth, State scored again. Then came Lehigh's turn, as noted above. She came to life with a vengeance and took the upper hand, scoring a touchdown. The half ended with State leading 14 to 7.

In the second half Lehigh kept up the good work, carrying the ball deep into State's territory. There on a fourth down Harper just missed a forward pass on State's five-yard line that would have meant a touchdown and a tied score. Lehigh was playing now and visions of victory were in the minds of her adherents. But a moment later Rote, who had been playing a splendid game, fumbled a punt and McCullom again recovered. The tide changed and State's great team work was no longer to be denied. Two beautiful runs by Wilson and plunges by Killinger resulted in another touchdown for State. Once in the fourth quarter Harper scooped up a fumble and carried it to State's 13 yard line, but Lehigh had shot its bolt and could not score. State secured the ball on an intercepted forward pass and carried it straight down the field for the final touchdown.

The line-up follows:

Lehigh.	Penn State.
Larkin.....	L. E.....McCullom
Cusick.....	L. T.....Madera
McCarthy.....	L. G.....Baer
Springsteen.....	C.....Bentz
Hoffman.....	R. G.....Bedenk
Henderschott.....	R. T.....McMahon
Adams.....	R. E.....Hufford
Henschen.....	Q. B.....Killinger
Bessemmer.....	L. H. B.....Redinger
Storer.....	R. H. B.....Lightner
Greer.....	F. B.....Hess
Lehigh	0 7 0 0—7
Penn State.....	7 7 0 14—28

Touchdowns—Greer, McCullom, Redinger, Lightner and Killinger. Goals from Touchdowns—Lightner 4, Cusick. Substitutions—Lehigh: Read for Larkin, Arnold for Hoffman, Roth for Springsteen, Harper for Bessemmer, Carlisle for Henderschott, Rote for Henschen, Henderschott for Carlisle, Leese for Storer, Henschen for Rote, Cousins for Greer; Penn State: Wilson for Redinger, Cornwall for Wilson. Referee—Evans, of Williams. Umpire—T. J. Thorpe, of Columbia. Head Linesman—Eckles, of W. & J. Field Judge—Maxwell, of Swarthmore. Time of Periods—15 minutes.

ROUGHING IT TO PENN STATE

Just because Lehigh played Penn State way up in Center County it does not follow that they had no undergraduate supporters. The University Band, while it was shy a considerable amount of capital, nevertheless, through the untiring efforts of its leader, Joe Recapito, '24, reached the game in time to play, although the

last 25 miles were made in a motor truck. Three truck loads of students are said to have travelled all night in a drive all the way from Bethlehem to Penn State. All kinds of schemes were worked but probably no one had a more interesting trip than the three enthusiasts who started on foot with practically no money and went to Penn State and back without spending a cent for transportation. Here is the story of their adventures as told in the "Brown and White."

The following article recounting the adventures of three undergrads in getting to Penn State "sans l'argent" may be of interest to readers who did likewise:

Possessing much Lehigh spirit, but little of the medium of exchange, and finding it necessary that the State game be seen, we had but one way to reach State College:—by relying on the generosity of automobilists.

Three of us left Bethlehem for State College Friday morning at 8.15. With large placards on our backs, bearing the legend, "Lehigh to Penn State, Give Us a Lift," and with little money, but a lot of hopes, our motto for the day was, "Lewistown or Bust." Little difficulty was encountered in getting "lifts." We left Reading at 11 o'clock, and reached Harrisburg at 3.15 p.m. It seemed impossible to reach Lewistown, eighty or ninety miles away before dark, and, although discouraged somewhat when we were forced to walk a few miles outside of Millerstown along the river road, we luckily secured a lift and rode, with the air of conquering heroes, into Lewistown at 7 o'clock.

Lewistown! We were certain to reach State and not miss a second of that game, so, to celebrate, we parted, reluctantly to be sure, with a little money for supper. Fate seemed to be dancing around us with Dame Fortune. As we were eating we overheard a conversation in which a lady stated that she was going to Milroy, almost half way to State. We secured this lift and left Milroy, 21 miles from Bellefonte, for what we thought would be a hike over the Seven Mountains, but half way through the town, we heard the roar of an engine behind us. Taking our positions, perfected by practice, we got set for our customary, "Give Us a Lift?" The machine turned out to be one from Bethlehem, with a bunch of Lehigh men in it, and although there was no room inside, we were given permission to make ourselves at home on the runningboards.

Were you out doors Friday night? It was not balmy weather by any means, and away up there in those mountains—Fight, Lehigh! Fingers cramped with the cold, fatigued from the day's wandering, a seemingly endless up-hill road, a stiff cold mountain breeze, hanging on for dear life on going around almost impossible curves, but,—State College at 9.30!

The game you have read about. We can say little more except to add praise to our team, the team that doesn't know when it is licked.

Wearied from the trip to State and naturally disheartened by our defeat, we left State at 7.15 p.m. for Bethlehem. Stopping only for breakfast in Harrisburg, we reached Fourth and New Streets at 12.05 p.m.

Almost five hundred miles and not a cent for transportation.

There are some experiences which are never forgotten. We believe this to be one, our trip "From Bethlehem to State in Twenty-one Lifts."

W. & J., 14—Lehigh, 7

Lehigh felt the effect of the two hard battles against Rutgers and State and this plus the nervousness of a bunch of freshmen (there were five in the original line-up) playing their first big game at home, resulted in a very erratic game on the part of Lehigh. It was not reasonable to expect our team to beat W. & J.'s seasoned veterans, who are making a bid for premier honors this year, but the fact remains that W. & J. did not show the strength expected and Lehigh playing as they did against Penn State would have won. At times they smashed through their opponents' line in great style but then would come an epidemic of missed signals and the play would slow up and the spurt die down. Also our forward passing game deserted us. We only missed them by inches but we missed them. Missed them several times with a clear field between the catcher and the goal.

In the first period the game was hard fought without either side excelling until Storer got off a kick which went out of bounds on W. & J.'s one yard line. Hogan punted out from behind his own goal line and Lehigh had the ball within striking distance. Henschen dove through for five yards and on the next play Lehigh fumbled and W. & J. recovered. Thus our first chance was lost.

In the second quarter W. & J. came strong and carried the ball to Lehigh's three yard line. A fifteen yard penalty and a fumbled forward pass apparently averted the danger. But Storer, who had been kicking well, got off a miserable punt that went out of bounds only a few yards ahead of where the ball was snapped. This time W. & J.'s forward pass was successful and Kopf scored. Lehigh started a forward pass attack in the closing minutes of the half but another fumble brought the advance to a sudden halt.

In the third quarter a strong consistent attack netted W. & J. another touchdown. Then Lehigh took one of their erratic spurts and drove the ball to W. & J.'s 12 yard line, where it was lost in downs. W. & J. kicked and Lehigh brought the ball back by rushing to the 15 yard line but again the attack crumpled up and the ball was lost. With the game almost over it

seemed that Lehigh had lost any chance to score. W. & J. by kicking and forward passing finally got the ball on Lehigh's 30 yard line. Then came the one chance for Lehigh to cheer. "Buddy" Lingle intercepted a forward pass and in a beautiful 80 yard run, aided by fine interference, he crossed W. & J.'s goal line for Lehigh's only score. It is worthy to note that Hardy, a freshman, played at quarter during the last 15 minutes and did good work.

The line-up was as follows:

W. & J.	Lehigh.
Kopf.....	L. E.....Larkin
Stein.....	L. T.....Harmes
Neale.....	L. G.....Hoffman
Crooke.....	C.....Roth
Vince.....	R. C.....McCarthy
Weiderquist.....	R. T.....Cusick
Koneolinka.....	R. E.....Adams
Hogan.....	Q. B.....Henschen
Brenkert.....	L. H. B.....Harper
Erickson.....	R. H. B.....Storer
Basista.....	F. B.....Greer
W. & J.....	0 7 7 0—14
Lehigh	0 0 0 7—7

Touchdowns—Kopf, Basista, Lingle. Goals from touchdowns—Stein 2, Hardy. Referee—F. J. Crolus. Umpire—Fultz, Brown. Head linesman—Davidson, Penn. Field Judge—Morrice, Penn. Substitutions—W. & J.: McLaughlin for Hogan, Hogan for Brenkert, West for Erickson, Daugherty for Vince, Spillers for Konvolinka, Vick for Basista, Brenkert for West, Buchanan for Cook; Lehigh: Henderschott for Cusick, Rote for Henschen, Arnold for McCarthy, Carlisle for Henderschott, Lingle for Harper, Reed for Larkin, Frain for Adams, Hardy for Rote, Morehouse for Harmes, Bessemer for Greer.

Lehigh, 21—West Virginia, 14

We have held back the printing of the BULLETIN for several days in order to print the result of this game. And it certainly was worth some delay to be able to record this splendid victory. The game started with a thrill when Martin, of West Virginia, caught the kick-off and ran the length of the field for what we feared was a touchdown. But tripping brought the ball back to mid-field and Lehigh's adherents caught their breath again. West Virginia gained no ground and finally a fumble gave Lehigh the ball. Gains by Bessemer and Hardy carried it to the 15 yard line, where Lehigh was penalized. Storer then uncorked a pass to Greer, who scored a touchdown. In the second quarter West Virginia carried the ball deep into Lehigh's territory but Lehigh held for downs. Storer's kick was hurried and in consequence short. Again Lehigh held and again the punt was poor. The third time West Virginia was not to be denied and Martin crossed Lehigh's line, tying the score. In the third quarter West Virginia showed great power and drove the ball to the one yard line, where Lehigh made a great stand and recovered it on

downs. Storer kicked to mid-field but later on West Virginia carried it over and were leading, 14 to 7. Things looked bad, but after the kick-off good gains plus a long kick put the ball close to the enemy's goal. They fumbled and Bessemer, scooping up the ball, dashed for a touchdown, tying the score once more. Both teams worked hard to break the tie. Finally a short forward from Hardy was caught by Larkin, who by a great run carried the ball 70 yards to West Virginia's six yard line. Two beautiful plunges by Cousens put it over and the game was won.

The line-up:

Lehigh (21).	West Virginia (14).
Frain.....L. E.....	Pierre Hill
Harmes.....L. T.....	Flanagan
Arnold.....L. G.....	Kay
Roth.....C.....	Philip Hill
Hoffman.....R. G.....	Setron
Henderschott.....R. T.....	Tallman
Read.....R. E.....	Hawkins
Hardy.....Q. B.....	Craver
Bessemer.....L. H. B.....	Martin
Storer.....R. H. B.....	Simon
Greer.....F. B.....	Geo. Hill
Lehigh.....	7 0 7 7—21
West Virginia.....	0 7 7 0—14

Touchdowns—Greer, Bessemer, Cousins, Simons, Martin. Goals from touchdown—Hardy (2), Kay (2). Substitutions—Lehigh: Garman for Hoffman, Carlisle for Henderschott, Moorehouse for Carlisle, Springsteen for Carlisle, Cousens for Greer, Larkin for Frain, Mellinger for Storer, Storer for Mellinger; West Virginia: Kiger for Hill, Herrick for Flanagan, Grahams for Hawkins, Lytle for Craver, Nerdacci for George Hill. Referee—Tufts. Umpire—Morice. Field judge—Heneage. Head linesman—Davidson. Time of periods—15 minutes.

CAMPUS NOTES

The total enrollment this year is 1068, divided as follows: Engineering, 770; Business Administration, 169; Arts and Science, 129. The class enrollment is Seniors, 167; Juniors, 237; Sophomores, 281; Freshmen, 350; Graduate Students, 7; Specials, 26.

The R. O. T. C. has opened a rifle range in Packer Hall basement.

The West Virginia game on October 29 was designated by the Faculty as the date on which fall house parties could be given by the fraternities.

The soccer season opened on Wednesday, October 19, with a game against Syracuse University, which resulted in a tie, 2 to 2.

Lafayette easily defeated Lehigh in a cross-country race on Wednesday, Oct. 29, winning by a score of 15 to 40.

Lehigh undergraduates are forming a press club to secure greater publicity for Lehigh in the city papers.

Professor Clarence E. Clewell, E.E., '05, now of the Engineering Dept. of the University of Pennsylvania, addressed the Y. M. C. A. on Sunday, October 23.

"Red" Lamberton, who had charge of the coaching of the ends, finished his six weeks contract at Lehigh on October 22 and left for his home in Minnesota. We were all mighty sorry to lose him for he was not only a splendid coach but a corking good fellow. Parisette, tackle on last year's Princeton team, is here for four weeks assisting Glick in coaching the line.

The Freshmen won all three athletic contests on Founder's Day, taking the football game by a score of 3 to 0, winning the baseball game 4 to 0 and running away from the Sophs in the mile relay.

The athletic field has been equipped with turnstiles and books of tickets have been issued to the students holding registration cards. No one can now enter Taylor Field on the day of a game without a ticket.

Organized hazing has returned to Lehigh and Freshmen are once more disciplined and made to obey the rules. The Arcadia is handling the situation in a fine manner and many an unfortunate "Frosh" is seen trudging the Campus walks with a green cap, a green necktie and a big placard on his back telling of his offense. The Chapel Rush was forbidden by the Arcadia but lecture rushes were permitted until Founder's Day. In addition we have two entirely new stunts. First a "Tying Up Contest," in which the classes try to tie up their opponents with a rope which is supplied each contestant. Second a "Pants Tearing Contest!" How does that sound to you? You sure ought to see it. It's a "whiz!" The second contest is supposed to be held before a male audience. It was pulled off (no joke intended) on the day of the opening football game, after the conclusion of the second half. The tying up contest took place between the halves. The "Sophs" won the first contest and the "Frosh" the second. Those who witnessed the second contest said the air was filled with scraps of trousers, shirts and underwear, and before the finish it looked like an exhibition of Greek statuary.

LEHIGH HOMECOMING

LAFAYETTE GAME, SATURDAY, NOVEMBER 19

Game Called at 2 P.M.

TWO BIG EVENTS THE NIGHT BEFORE

LAFAYETTE GAME SMOKER

The annual undergraduate smoker will be held at Taylor Gym, at 7.30 p.m. A great program has been arranged. Boxing, wrestling, and music by the University Band.

A brigade of speakers headed by Coach Glick, Bosey and Okey. A rip-roaring Lehigh night.

LEHIGH HOME CLUB DINNER

Kurtz Restaurant at 7 p.m. Price, \$2.50. The team will be honored guests for a short time. The speakers at the Smoker will also speak at the Dinner. A chance to see your old chums and reminisce about the pre-historic Lafayette games.

ALL ALUMNI INVITED TO BOTH EVENTS. TAKE YOUR CHOICE OR COME TO BOTH. THE FUN AT THE DINNER WILL BE AT ITS HEIGHT AFTER THE SMOKER. SERVICE A LA CARTE FOR LATE COMERS AT THE DINNER WITH A COVER CHARGE OF \$1.00 TO HELP MEET THE EXPENSE OF ENTERTAINMENT, CIGARS, ETC. THOSE DESIRING RESERVATIONS FOR THE DINNER SHOULD WRITE TO

R. W. Wolcott, Secretary,
Bethlehem, Pa.

NEWS OF THE ALUMNI CLUBS

LEHIGH HOME CLUB

On August 17th about twenty-five alumni living in or near Bethlehem met at the Bethlehem Club to talk over the Athletic situation at Lehigh and the part that the alumni could take to further same. Okie outlined a plan which he and several other alumni had conceived and which they called the Students' Self-Aid Bureau. The plan was discussed and those present voted their support. It was further decided to call a meeting of all alumni living in the vicinity of Bethlehem on August 30th at which time the plan would again be outlined and some definite steps taken to promote it.

At the meeting on August 30th there were about sixty-five of the local alumni present and it was decided to reorganize the Lehigh Home Club with the idea of bringing about a closer relationship among the local alumni and propagating such plans as would have as their aim the advancement of Lehigh. It was decided that the Home Club should get behind the Student' Self-Aid Bureau plan and give to it its unqualified support. The following officers were elected to serve for the ensuing year:

W. L. Estes, '05, President.
J. E. Little, '94, Vice-President.
R. W. Wolcott, '18, Secy. and Treas.

The President was authorized to appoint an executive committee of not less than fifteen members whose duties should be to transact such business for the Club as would come before it and to give such

aid as is possible in the plan for the advancement of Lehigh. The executive committee to report verbally or in writing to the Club on such business as they had transacted and for the ratification of same. The President appointed the following executive committee:

F. W. B. Pile, '88	F. B. Gearhart, '01
J. E. Little, '94	J. A. Frick, '03
W. R. Okeson, '96	George Beck, '03
J. B. McBride, '96	W. L. Estes, '05
R. Laramy, '96	C. S. Kenney, '10
E. G. Grace, '99	M. L. Jacobs, '10
J. M. Buckland, '99	George Flick, '14
A. C. Dodson, '00	F. L. Stephenson, '17
E. T. Satchell, '00	R. W. Wolcott, '18
T. Burns, '01	Samuel Mitman, '19
W. A. Wilbur, (Hon.) '20	

It was decided to hold the meetings of the Executive Committee the first Monday in every month.

On September 15th the first dinner and smoker was held at the Kurtz Restaurant. There were about one hundred and fifty present, including the coaches, the football manager and captain, W. C. B. Ainey, Chairman of the Public Service Commission, and Dr. Emery, acting President of the University. J. E. Little, Vice-President, acted as toastmaster in the absence of W. L. Estes, Jr., President. Mr. Ainey spoke on Lehigh in general, emphasizing the need of all alumni taking an interest in athletics and the necessity of training men both physically and mentally to help assume the burdens of the country.

Glick told us of his problems and the outlook for the coming year. Dr. Emery spoke about the incoming freshman class and the changes in the academic work as suggested and formulated by the faculty and the Alumni Educational Committee. Okeson explained the Students' Self-Aid Bureau plan, told us why it was needed and the steps being taken to put the plan across. Last but not least Bossey gave us a rousing send off.

The dinner and speeches were interspersed with cheers, songs and some good entertainment, and the whole affair was a booming success.

On October 3rd the Executive Committee met in regular session at the Bethlehem Club. Due to the great amount of work that the Steering Committee is called upon to handle in connection with the Students' Self-Aid Bureau it was decided that the Executive Committee should take over the executive work of the Soliciting Committee. D. M. Petty, '09, gave a brief outline of the activities of the Students' Self-Aid Bureau to date. It was decided to hold a Dinner the night before the Lafayette game and that the Home Club would invite some out of town alumnus to be the principal speaker of the evening. It was further decided not to have associate members of the Lehigh Home Club but that if anyone desired to bring friends to the dinner they would be free to do so. It was also decided to send an invitation through the BULLETIN for all out-of-town alumni to attend.

NEW YORK LEHIGH CLUB

At the annual meeting of The Lehigh Club of New York, Inc., held at the Machinery Club on October 14th, the following were elected Governors to serve for a term of three years.

Emil Diebitsch, '89 F. R. Horne, '07
A. L. Saltzman, '97 F. E. Galbraith, '11
J. F. Middledith, '99 E. S. Colling, '12
A. S. Diven, '16

H. R. Walters, '03, gave a very complete explanation of the plans for developing the Students' Self-Aid Bureau, and the great benefits to be derived therefrom.

The following resolution was unanimously adopted:

"That The Lehigh Club of New York, Inc., endorse and support the Students' Self-Aid Bureau."

JACOB STAIR, JR.,
Secretary.

At a meeting of the Board of Governors the following officers were elected for the coming year:

President: L. D. Rights, '93.
Vice-President: Dyer Smith, '03.
Secretary: Morton Sultz, '12. American T. & T. Co., 195 Broadway, New York City.

PITTSBURGH LEHIGH CLUB

On Saturday afternoon, October 1, the Pittsburgh Lehigh Club held its Annual Outing at the Youghiogheny Country Club. The afternoon was devoted to golf matches, trap shooting, baseball, etc., with prizes for each event. At seven o'clock the guests sat down to a beef-steak dinner. All of this I glean from the preliminary announcement. Having been in Pittsburgh two days before in the interests of the Students' Self-Aid Bureau and being unable to return for the outing, I have no personal knowledge of who won the prizes, and so far have had no report of what happened.

PHILADELPHIA LEHIGH CLUB

On Friday, October 21, the Club held a meeting at the University Club and discussed the proposed Students' Self-Aid Bureau. It was moved seconded and carried that the Club is in favor of the creation and maintenance of this bureau and is ready to lend its hearty support. The following committee was appointed to obtain subscriptions for the operating fund: E. T. Murphy, '01, Chairman; R. H. Morris, '99; Moriz Bernstein, '96; Robert Farnham, '99; W. A. Bornemann, '17.

It was also decided to hold its annual lobster dinner and Lafayette game smoker at Bookbinders on Thursday, November 17. Okey has promised to be present and bring one of the coaches, if possible.

LEHIGH CLUB OF NORTHERN OHIO

The fall meeting and dinner will be held on Nov. 15, in Cleveland, at which time the Students' Self-Aid Bureau will be discussed and in addition there will be a rousing Lafayette game smoker. Okey has promised to try and get to Cleveland, even though it is the week of the Lafayette game, and if by any chance he finds this impossible will send some one equally conversant with the athletic situation. The guest of honor will be Frank R. Coates, B.S., '90, E.M., '91, a star of the championship teams of '89 and '90, and now the President of the Toledo Railways and Light Co.

LEHIGH CLUB OF SOUTHERN NEW ENGLAND

One of the most unique Lehigh dinners I ever attended was held May 21, 1921, on the top of a mountain, ten miles from Hartford, Conn. C. H. Veeder, '86, the President of the Club, owns this mountain and has a road leading to the summit where he has built a great cabin of logs. In the spacious living room he entertained the Club and the following is a description of this dinner by the Club Secretary, J. W. Thurston, '96.

Dear Okey:

On looking over my papers, it occurred to me that you possibly did not have a list of the men who attended our meet-

ing last May, together with what happened, so that it could be reported properly in the BULLETIN, so here goes:

Location—Mr. Veeder's cabin.

Present—C. P. Richmond, W. P. Spear, H. W. Pfahler, H. Chase, S. W. Burns, E. P. Hayes, R. C. Noerr, A. E. Greene, E. B. See, H. A. Wilcox, L. T. Shipp, E. L. Willson, W. E. Johnson, T. A. Shaffer, J. S. Thompson, E. W. Fothergill, R. A. Gadd, F. C. Lauderburn, C. H. Struble, C. H. Veeder, C. F. Townsend, C. W. Bnell, C. B. Backes, J. W. Thurston and Walter R. Okeson.

Elegant dinner—interesting talk from Okey about presidential situation, athletic outlook and Lehigh generally.

General discussion participated in by all.

Vote of the Lehigh Club of Southern New England expressing its appreciation of the untiring and unselfish work of the Alumni Secretary and stating its conviction that the present active interest shown by the alumni in Lehigh affairs was due entirely to his enthusiasm and leadership.

Officers elected for next year—President, Curtis H. Veeder; Secretary, J. W. Thurston.

J. W. THURSTON,
Secretary.

FOUNDER'S DAY

Address by the Secretary of War

The annual Founder's Day Exercises at Lehigh University were observed on October 8 in the Packer Memorial Church. The scheduled speaker, the Honorable John W. Weeks, Secretary of War, found it impossible to leave Washington on account of imperative matters of national importance. The address was presented on behalf of the Secretary of War by Major-General James G. Harbord, Deputy Chief of Staff.

Following the address eleven degrees of Master of Arts and Master of Science were conferred by Vice-President Emery. These included three degrees to women, the first ever conferred by Lehigh.

Speaking for Secretary Weeks on "Student Military Training," General Harbord said in part:

Lehigh University has been and is noted for its promotion of matters of national public service. I am therefore glad to have this opportunity to speak on the subject of Student Military Training here, because the time has now arrived when it is possible to speak of military training in the schools and colleges as a part of the comprehensive program of national defense. I am particularly glad to speak on this subject at Lehigh University because Doctor Drinker has not only been one of the pioneers in developing student military training but through his leadership he has had no small

part in organizing and developing the public opinion that has finally crystallized into a settled national military policy.

In my capacity as Secretary of War I am officially disposed to emphasize the importance of student military training from the standpoint of its value to the national defense. It means an assured supply of highly intelligent reserve officers. It means that the requirements of national service are to have proper consideration in the education of our future thinkers and men of affairs. It means that a new public value is being developed in the graduates of our schools and colleges. It means a more intelligent public opinion with reference to military economics and international affairs. This alone will justify student military training in the minds of all patriotic citizens.

But student military training does not involve a sacrifice for the public good without return to the individual. It has a positive educational value for each student. Our most eminent educators have agreed that, aside from its physical benefits, time devoted to the military studies in the R. O. T. C. is fully entitled to credit in the general scheme of mental culture. The student of engineering will be a better civil engineer for some knowledge of the military applications of his profession to the nation.

The progress of military training in our schools and colleges is already most encouraging. At the close of the past academic year, the total enrollment in the Reserve Officers' Training Corps was 90,811. There were 227 Senior Units with 5,025 students enrolled in the Advanced Courses and 39,228 students enrolled in the Basic Courses. There were 116 Junior Units with an enrollment of 46,558. Of these Junior Units, 51 with an enrollment of 34,472 were organized in the High Schools of the country. Of the 5,025 students in the Advanced Courses, 1,069 qualified for commissions in the Officers' Reserve Corps at the close of the academic year.

I am particularly impressed by the record of Lehigh University during the past year. The total enrollment in the University's R. O. T. C. was 545. It is expected that this year's enrollment will be about 700, with at least 70 in the Advanced Courses. Lehigh sent 17 advanced students and 130 basic students to this year's R. O. T. C. Camp at Plattsburgh. I am informed that the Lehigh students had a higher average of marks than those of any other institution represented at the camp. This gave Lehigh the Efficiency Cup. The Seventh Company, composed exclusively of Lehigh men, was officially rated as the best company at the camp. The Eighth Company, with a fifty per cent. membership of Lehigh men, was rated as the second best company in the camp. The Lehigh Rifle Team won the Intercollegiate rifle match and with it the honor of representing the R. O. T. C. Units of the 1st, 2nd and 3rd Corps Areas in the National Matches at Camp Perry.

LEHIGH MEN WHO WRITE

In the July number of the "Ingenieria Internacional" contains an article by Prof. Benjamin L. Miller, Head of the Dept. of Geology, entitled "Geologia y Minería Andinas." This article covers the geologic origin, characteristics and mineralization of the Andes Mountains, and is illustrated by photographs taken by Prof. Miller.

The June 2 issue of the "Engineering News-Record" contains an article by M. O. Fuller, Asst. Prof. of Civil Engineering, on "Tests of Timber Dock Stringers."

During August and September there was published in the "Saturday Evening Post" one of Edwin Lefevre's ('91) entertaining serials entitled "Face to Face."

Alvan Macauley, '92, President of the Packard Motor Car Co., had an article in the July number of "Motor" in which he declared that the future of the automobile industry will dwarf the achievements of the past. Macauley's presentation was the subject of a double column editorial comment in the "New York Evening Journal" of August 3. One statement that will interest and perhaps astound most readers is that "In 1920 there were, at a moderate estimate, nearly seventy billion passenger-miles run by automobiles in this country, a total almost 50% beyond the number of passenger-miles of transportation furnished by steam railroads."

Macauley also had an article in the July issue of "System" on "How We Budget Our Production Before We Get the Orders."

"Mechanical Engineering" for May carried an article by Morris Llewellyn Cooke, '95, entitled "On the Organization of an Engineering Society." In this he emphasizes the necessity for such organization as will include the "broadest possible cooperation with other organized groups—professional, industrial, commercial and social."

R. G. ("Shine") Kirk, '05, Lehigh's contractor-author, had a rattling tale of he-men construction and a modicum of love interest in the "Saturday Evening Post" of September 17. It was entitled "Malloy Campeador." A scenario based on this story has been accepted by the Universal Film Corporation. Another tale by Kirk, entitled "Friends of the Grey Hound," appeared in the October "Cosmopolitan."

The May 12 issue of "Musical Courier" of New York contains an article on the Bach Choir by Raymond Walters, '07.

LEHIGH MEN IN THE LIMELIGHT



Adolph A. Hoehling, '89, New Associate Justice of District of Columbia Supreme Court.

Adolph A. Hoehling, '89, for many years a prominent member of the bar of Washington, D. C., was nominated on June 6, 1921, by President Harding to be Associate Justice of the Supreme Court of the District of Columbia. On June 13 the Senate confirmed his nomination and on June 17 he was inducted into office. The Washington papers all carried full accounts of his nomination, confirmation and induction into office, with numerous pictures and a full account of Justice Hoehling's career. You may be sure the Washington Lehigh Club did not fail in sending all the clippings to the Editor, for which he thanks the various members who took this trouble. Aid of this kind is deeply appreciated.

A son of the late Rear Admiral A. A. Hoehling, U. S. N., who was stationed in Washington during a considerable part of his active service in the medical corps of the Navy, Mr. Hoehling received his collegiate training in Troy Polytechnic and Lehigh universities. When he decided upon law as his life work he entered old Colombian College, now George Washington University, and holds a degree in law from that institution.

He began the practice of law in the District about thirty years ago, with the firm of Shellabarger & Wilson. Following the deaths of the senior members of the partnership, he continued in the office in a private practice. In 1913 he

formed the firm of Hoehling, Peelle & Ogilby, of which he is a member at present.

During the world war he was commissioned as a major and served in the office of the judge advocate general. He was the executive officer under General Crowder and also served as legal adviser to the District draft board.

He is the trust officer of the National Metropolitan Bank and a director in that institution, and a former president of the District Bar Association. Mr. Hoehling is married and has three children.

Madam Curie the Guest of

Harlan S. Miner, '88

The Philadelphia "Evening Ledger" and the "Bulletin" of May 24, 1921, carried a long account of the visit Madam Curie made on that day "to a friend, Dr. Harlan S. Miner, Chief Chemist for the Welsbach Light Co., in Gloucester."

Tired of the constant strain of the exercises in her honor and keen as always in the things pertaining to her beloved science, she ran away from the Bellevue-Stratford and went in a taxi to Gloucester where she spent several hours in visiting Dr. Miner's laboratories and inspecting the department where mesotherium, a substance similar in its properties to radium, is produced. Mesotherium is developed from monosite sand and plays a part in the manufacture of gas mantles. Madam Curie, ere she left, was urged to take her pick of a number of test tubes containing this precious substance and as she needed some for her experiments she gratefully accepted the gift, which acceptance doubtless gave to Dr. Miner and the other Welsbach officials the greatest pleasure of a wholly delightful experience. Meanwhile newspaper men and reception committees were frantically trying to discover the lost guest of honor, who for two hours at least was completely lost and perfectly happy.

Asa E. Phillips, '90, Resigns as Sanitary Engineer of the District of Columbia

The Washington "Evening Star" of August 3rd carries a front page article headed by a photograph of Asa E. Phillips, '90, telling of his resignation after 30 years service as Sanitary Engineer of the District government. The following are extracts from the article:

Since entering the service of the city in 1891, Mr. Phillips has served continuously in the sewer division, once as superintendent and later as sanitary engineer.

He is credited with having designed and supervised construction of the six-million-dollar sewage disposal plant of the city, which is regarded as one of the most perfect in the United States.

Mr. Phillips also leaves behind him as a monument to his long period of service the up-to-date sewerage system, the construction of which has cost a total of \$25,000,000.

Mr. Phillips is a native Washingtonian and a graduate of Central High School. From that school he went to Lehigh University, where he graduated in engineering. Before coming back to Washington he studied sanitary engineering abroad. He also has been consulting engineer for a number of cities, including New York, Philadelphia and Chicago.

At the outbreak of the war he was called by the Council of National Defense into the committee on emergency war construction of camps and cantonments.

He was consulting engineer for the port of embarkation at Newport News, Va., throughout the war. He is a member of the American Society of Civil Engineers and several similar organizations; of the Washington Country Club, and is chairman of the committee on sewerage of the Washington Board of Trade.

Colonel George Crawford, '17, Returns from Poland

The Philadelphia "North American" of June 27, 1921, had a big front page article with a picture of Crawford with the following headlines:

Colonel Returns to Wilmington after Campaign Against Bolsheviks

AN AMERICAN ACE

The article tells of Crawford's arrival at his home, 1720 Washington Street, Wilmington, Del., and states "he is an American ace and has been decorated with the award of 'Military Virtue,' the highest award Poland can give, together with several other Polish medals for service and valor."

The readers of the BULLETIN know something of George's exploits, accounts of which have appeared in our pages from time to time. He went to France in September, 1917, after training at Mineola, L. I. He was in France eleven months, taking part in the St. Mihiel and Argonne offensives and in the latter was shot down by anti-aircraft guns and taken prisoner. Released after the armistice, he accompanied Herbert Hoover on his trip through Russia and then joined the Polish army where he was put in command of an air squadron. He fought with great distinction through the entire war with the Reds, his personal exploits being of the most daring nature. His decoration for "Military Virtue" was conferred on him by General C. E. Fauntleroy, of Chicago, Commander-in-Chief of the Polish Air Service.

MARRIAGES

Class of 1916

On October 1, 1921, William C. Caball, Jr., to Miss Mary S. Richardson, of 5007 Pine Street, Philadelphia, Pa. At home after November 1 at 2911 Paul St., Baltimore, Md.

Class of 1917

On September 27, 1921, Russell M. Nichols to Miss Alice Hubbard Bishop, of Guilford, Conn. Nichols is with the Acme Wire Co., of New Haven, Conn.

Class of 1919

On July 6, 1921, J. Harold Wagner to Miss Florence Anna Guldman, of Reading, Pa. At home until January 1, 1922, at 115 North Jasper Street, Allentown, Pa.

Class of 1920

On October 8, 1921, Alvin Newton Bugby to Miss Helen Horn, of Catasauqua, Pa.

DEATHS

Class of 1886

Dr. Joseph William Richards, Professor of Metallurgy at Lehigh University, died at his residence, 231 East Market Street, Bethlehem, Pa., on October 12, 1921, at 9 a.m., from heart failure. He was born in Oldbury, England, July 28, 1864. He was graduated from the Central High School of Philadelphia, Pa., in 1882, with the degree of Bachelor of Arts (A.B.) and entered Lehigh University in September of that year. He was graduated from Lehigh University in 1886 with the degree of Analytical Chemist (A.C.). He pursued graduate work at Lehigh University and was awarded the degree of Master of Science (M.S.) in 1891 and of Doctor of Philosophy (Ph.D.) in 1893. He received the degree of Master of Arts (A.M.) from the Philadelphia Central High School in 1887. From 1886 to 1887 Dr. Richards was Assistant Superintendent of the Delaware Metal Refinery of Philadelphia. In September, 1887, Dr. Richards was appointed Assistant Instructor in Metallurgy and Blowpiping at Lehigh University, and he served continuously at the University from that time to his death in the following positions: Assistant Instructor in Metallurgy and Blowpiping, 1887-1888; Instructor, 1888-1890; Instructor in Metallurgy, Mineralogy and Blowpiping, 1890-1897; Assistant Professor, 1897-1903; Professor of Metallurgy, 1903-1921.

Dr. Richards was one of the foremost engineers of the country and had an international reputation in various branches of metallurgical technology. His services were widely sought as legal expert in chemical and metallurgical cases. He was a member of the U. S. Assay Commission, 1897; representative of the Franklin Institute to the International Geological Congress held in Russia in 1897; member of the jury of awards, department of Chemistry, of the National Export Exhibition, Philadelphia, in 1899; member of the jury of awards and chairman of the metallurgical sub-jury, Panama-Pacific International Exposition, 1915; member of the U. S. Navy Consulting Board, 1915-1918. He was a charter member of the American Electrochemical Society, its first President, 1902 and 1903, and its Secretary since 1907. He was a member of the Franklin Institute, Philadelphia, President of the chemical section, 1897, 1899, and professor of electrochemistry of the Institute, 1907-1910. He was a member of the Faraday Society, Deutsche Bunsen Gesellschaft, American Chemical Society, American Institute of Mining and Metallurgical Engineers, former Vice-President of the Institute and Chairman of the Iron and steel committee since 1914; member of the Iron and Steel Institute of Great Britain, of the American Iron and Steel Institute, of Societe de la Chimie (France), of the American Institute of Chemical Engineers; honorary member of the American Electroplaters Association. He was a member of the Board of the Engineering Foundation and a member of the National Research Council. He was the representative of the American Institute of Mining and Metallurgical Engineers on the joint conference committee of the federated engineering societies.

Dr. Richards was a member of the Chemists' Club (New York), the Engineers' Club (Philadelphia) and the Niagara Club (Niagara Falls). He was the author of a treatise on Aluminum in 1887, the only treatise on that metal in English; of the revised third edition in 1895; of Metallurgical Calculations, Part 1, and General Metallurgy in 1906; of Part 2, Iron and Steel, 1907; of Part 3, Non-ferrous Metals, 1908; also of Articles on Metallurgy in Chandler's Encyclopaedia and of many contributions to scientific journals. He was the translator of books from German and Italian, entitled, "Electrolysis of Water," "Electrometallurgy of Chromium," "Arrangement of Electrolytic Laboratories," "Electrolytic Production of Metallic Objects," "Cementation of Iron and Steel." Dr. Richards' books on Metallurgical Calculations have been translated into German, French, Italian, Spanish, and Russian.

Two generations of Lehigh men knew and loved "Plug" Richards, as he was affectionately called when his back was turned. None of Lehigh's sons has done more than Dr. Richards for his Alma Mater. Beginning a year after graduation he worked for her the rest of his life and gave yearly of his great store of knowledge to a succession of classes whose entering numbers total 7000. His world-wide reputation reflected glory on his college. With him passes the last except one (Professor Lambert) of the Old Guard who first placed Lehigh on the high pedestal she has occupied as an engineering college for three decades.

Class of 1888

Samuel Stockton Voorhes died on September 30, 1921, at Portland, Oregon, where he had gone for a rest and to recover his impaired health. He was Chemist with the Bureau of Standards at Washington, D. C., previous to his death and had been in government service since 1901. He was a member of the American Chemical Society and one of the founders and leaders of the American Society for Testing Materials, having been the first chairman of the Patent Committee of that Society.

Class of 1900

John K. Digby died at Johannesburg, South Africa, on July 30, 1921. He had been suffering for some time and had to quit work at the mines when he reached the second stage of phthisis. Finally his heart gave out under the strain. Digby has been connected with the Aurora West United Gold Mining Co., Marnsburg, Transvaal, S. A. He leaves to survive him his wife and four children, the youngest being only two and a half years old.

Class of 1919

Lloyd C. Fenstermacher, B.S., was killed in a fatal automobile accident on July 9, 1921, near Wilder P. O. in Montana. Fenstermacher had arrived in Montana a few days before as Assistant Geologist of the U. S. Geological Survey. Together with a companion they had left headquarters at Lewistown, Mont., and had crossed the Missouri to do some work in the Little Rocky Mountains. On their return the car had trouble in making the steep grade up the bluffs above the river. The other man was driving and finding the car stalled, backed up to make a fresh start. He got off the road and in attempting to get back upset the car, plunging Fenstermacher underneath. Before he succeeded in getting help to raise the car poor Lloyd had passed away, his life crushed out by the weight of the car. Fenstermacher, who was originally in the class of '18, was a 2nd Lieutenant in the Field Artillery during the war and after returning to college and graduating worked for a time for the Sinclair Oil Co. in Columbia, South America. He then worked for the U. S. Geological Survey in the Pittsburgh district and in Tennessee before going to Montana.

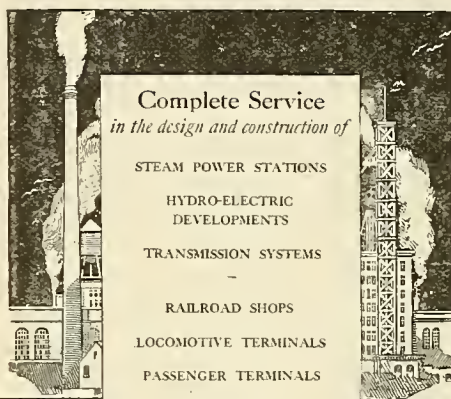
PERSONALS

Class of 1877

Professor H. S. Jacoby was Lehigh's delegate at the Inauguration of President Farrand of Cornell University.

Class of 1879

J. H. Tracy is now Secretary and General Man-



Complete Service
in the design and construction of

STEAM POWER STATIONS
HYDRO-ELECTRIC DEVELOPMENTS
TRANSMISSION SYSTEMS
—
RAILROAD SHOPS
LOCOMOTIVE TERMINALS
PASSENGER TERMINALS
ELECTRIFICATION
—
INDUSTRIAL PLANTS OF EVERY CHARACTER

DWIGHT P. ROBINSON & COMPANY
INCORPORATED
ENGINEERS AND CONSTRUCTORS
125 EAST 40TH STREET
NEW YORK

CHICAGO YOUNGSTOWN DALLAS LOS ANGELES MONTREAL

ager of the Beaverhead Copper and Gold Mining Co. with offices in the Gas and Electric Building, Denver, Colo.

Class of 1886

Priestley Toulmin will be Lehigh's official representative at the inauguration of President Snavely of Birmingham Southern College.

Class of 1888

Osmond Rickert, formerly General Roadmaster of the Union Pacific Railway at Monroe, La., is now a Consulting Civil Engineer at 119 South Cedar Street, Hazleton, Pa.

Class of 1894

Henry Adams is practicing as a Consulting Mining Engineer at 720 Watchung Avenue, Plainfield, N. J.

Charles A. Newbaker, for whom we had no address, writes that he is Inspector New York District Office, the Panama Canal, 24 State Street, New York City.

Lieut. Col. Godwin Ordway has been transferred from Fort Monroe, Va., to Fort Leavenworth, Kas.

Class of 1895

R. B. Brinsmade is a Mining Engineer at Ixmiquilpan, Hgo., Mexico. While it is not generally known, the famous Article 27 of the Mexican Constitution of 1917 was derived from a book written by Brinsmade and published by the Revolutionary Government in 1916.

William Reinecke, Jr., whom we had not heard from since his return from South America, is living at the Berkley Hotel, 170 West 74th Street, New York City. Bill is at present going through a "course of sprouts" at Bill Brown's Training Farm, Garrison, N. Y.

In the October issue we noted that J. F. van Benthem van den Bergh was living in America. We have just had a postal from him stating he has returned to The Hague, Holland.

Class of 1898

Horatio F. Brown, formerly with a bond house in Denver, Colo., is now Assistant to President, Bor-

den Steel Corporation, 305 Keyser Bldg., Baltimore, Md., and living at Garrison, Baltimore Co., Md.

Class of 1899

Natt M. Emery, Vice-President of Lehigh, was our official representative at the inauguration of Dr. Thomas as President of Pennsylvania State College, and Dr. Aydelotte as President of Swarthmore College.

Class of 1901

The "Gas Age Record," in its September 3rd number, has under the heading, "Men of the Industry," an article about and picture of William A. Ehlers. Ehlers until recently was Industrial Fuel Engineer of the American Gas Association. He is now in charge of the Public Utility Department of the Johns-Manville Co., with office at 296 Madison Avenue, New York City.

"Slim" Wilson is in California this fall. His address is 34 East Mission Street, Pasadena, Calif.

Class of 1902

A. G. Bohannon, who is with the Moreland Motor Truck Co., of Los Angeles, Cal., has returned from an extended business trip through the Orient, visiting Japan, Korea, Manchuria, China, Philippines, Malay States, Dutch East Indies and Australia. During his absence a son "Boothe" was born.

Class of 1904

Luther Becker is now associated with the Bureau of Foreign and Domestic Commerce of the U. S. Dept. of Commerce and is Chief of the Iron and Steel Division, Room 1011, Dept. of Commerce Building, and is living at Washington, D. C. His home address is 1028 Columbia Road, N. W.

We have a new address for J. E. Sheesley, care of Aberdeen Hotel No. 10 Washington Place, Newark, N. J.

Class of 1905

Frank H. Browning, formerly Chief Engineer, Union Sulphur Co., Sulphur, La., writes that he is now living at 1522 35th Avenue, Seattle, Wash., but fails to state his present occupation.

Class of 1906

E. E. Johnston is an attorney and real estate operator, with offices No. 16 St. Paul Street, Baltimore, Md.

S. R. Smith, formerly Accountant, is now Secretary for the Durham Duplex Razor Co., 190 Baldwin Avenue, Jersey City, N. J., and is living at 547 Lincoln Place Brooklyn, N. Y.

Class of 1907

J. I. Porter is now Electrical Engineer, The H. N. Crowder, Jr., Co., Easton, Pa., and is living at 1826 Washington Blvd.

C. K. Roulston, formerly Sales Engineer, Clyde Iron Works, New York City, is now a Construction Equipment Specialist, representing various manufacturers, with offices at 88 Broad Street, Boston.

**WOOD WORKING MACHINERY
SPECIAL MACHINE WORK
SLOW SPEED ELEVATORS
GEAR CUTTING**

**B. M. ROOT COMPANY
YORK, PA.**

B. T. ROOT, '06, PRES.
J. W. STAIR, '06, TREAS.

For Business Men

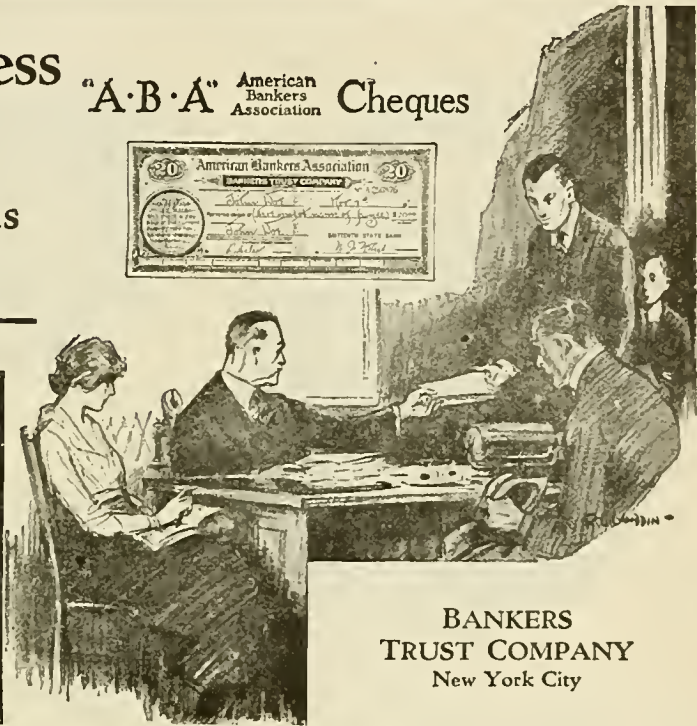
—as desirable as
an escape
from details—

"A·B·A" American Bankers Association Cheques



Facts About "A·B·A" Cheques

- universally used and accepted
- your countersignature in presence of acceptor identifies you
- safe to have on the person because they cannot be used until they have been countersigned by the original holder
- safer than money, and frequently more convenient than Letters of Credit because the bearer is less dependent on banking hours
- issued by banks everywhere in denominations of \$10, \$20, \$50, and \$100
- compact, easy to carry, handy to use



**BANKERS
TRUST COMPANY**
New York City

Mass., and is living at No. 16 Algonquin Street, Dorchester, Mass.

Class of 1909

Floyd C. Flory, formerly teacher in the Pittsburgh High School, is now Dean and Teacher of Mathematics, Pennington School, Pennington, N. J.

Class of 1910

C. A. Gosztonyi has moved from Charleston, W. Va., to No. 3 Curry Street, Armor Park, South Charleston, W. Va. He is with the Government Armor Plate Plant.

John L. Mosher has moved from Wheeling, W. Va., to Moundsville, W. Va. We presume he still represents the Hartford Fire Insurance Co., but he doesn't say so.

A. Maxwell Paget, who is with the American Trading Co., Shanghai, China, was in Bethlehem a short time ago while on a visit to America.

Class of 1911

J. R. Dawson, who is with the Carbide and Carbon Co., has been transferred from Niagara Falls to Long Island City, N. Y.

M. L. Vincente, who is now Construction Engineer, Porto Rico Irrigation Service, is living at 41 Ashford Street, Guayama, P. R.

Class of 1912

Edward L. Estabrook, formerly a Geologist in Pittsburgh, Pa., is now Petroleum Production Engineer, Midwest Refining Co., Casper, Wyo.

Class of 1913

R. S. Babcock is now Manager of the Standard Spring Co., 409 South 5th Street, Minneapolis, Minn.

Alexander Kalafan is now teaching Civil Engineering at the Central Y. M. C. A., New York City, and is living at 116 Eighth Street, West New York, N. J.

Leslie G. Matthews, who is Sales Manager for the duPont Export Co., 120 Broadway, New York City, is living at Morristown, N. J.

L. B. Savastio is now working for the Bethlehem Fabricators, Inc., and living at 408 Prospect Avenue, Bethlehem, Pa.

Chandler Weaver, II, is Industrial Engineer, Shale Oil Mach. & Supply Co., 1669 Broadway, Denver, Colo., and lives at De Begne, Colo. He was formerly with the Link Belt Co. in Philadelphia.

Class of 1914

Rev. F. M. C. Bedell writes to the Philadelphia "Public Ledger" from Houston, Texas, where he is Rector of Christ P. E. Church, advocating boxing bouts and telling of the good effect that these bouts have had among the boys in Houston.

John H. Diefenderfer, of 144 East Goepf Street, Bethlehem, Pa., has just been admitted to the Northampton County bar.

J. P. Faherty, who has been with the Bethlehem Shipbuilding Corporation, at Wilmington, Del., writes that he has moved to 701 Allison Street, N. W., Washington, D. C. He does not state whether he has changed his job.

J. W. Gemmel is no longer in Scranton but is a Service Engineer, Railroad Sales Dept., of National Carbon Co., Inc. His headquarters are in Cleveland, but he is living at 528 North 11th Street, Allentown, Pa.

H. R. Griffen writes that he may not return to Brazil and that his mailing address is 218 Edgemont Street, Media, Pa.

B. R. Pittenger is Assistant Examiner, Patent Office, Washington, D. C.

Class of 1915

At a dinner given by H. D. Cranmer on August 19, 1921, at the American Club in Buenos Aires,

Let Fatima smokers tell you

Ask them at the big Games

Between periods, just look around you and see the Fatima packages pop out. College men first "discovered" Fatima, years ago; and present generations seem likewise to agree that

*"Nothing else
will do"*

FATIMA CIGARETTES

TWENTY for 25c—but taste the difference

LIGGETT & MYERS TOBACCO CO.



Argentine, his engagement to Miss Sarita D. Campbell, of Asuncion, Paraguay, was announced. Miss Campbell is the daughter of Daniel Campbell, Dist. Supt. of the Paraguayan Central R. R.

O. E. Mills is no longer living in Philadelphia but at New Dorp, Staten Island, N. Y.

William C. Mayer, formerly with the Guaranty Trust Co., is now with Booth & Hewitt, Attorneys-at-Law, 165 Broadway, New York City.

Class of 1916

Wilmer H. Koch is Analytical and Research Chemist, Mathieson Alkali Works, Inc., Niagara Falls, N. Y., and lives at 515 Fourth Street.

Bruce F. Kring is salesman for Industrial Extension Institute, of New York, and is living at 1822 East McMillan St., Cincinnati, O.

P. S. Mack, who has been with the General Electric Co., in Schenectady, N. Y., is now a Patent Attorney for them at 1405 G Street, Washington, D. C., living at 1120 13th St., N. W.

M. N. Owen had the degree of A.M. conferred on him by Columbia University last June.

F. W. Ryder, formerly with the Lehigh Valley Coal Co., at Wilkes-Barre, Pa., is now Power Engineer, Bemis Bros. Bag Co., 51st Street and 2nd Avenue, Brooklyn, N. Y.

Morris E. Stoudt, General Manager, Pocono Metal Mfg. Co., Stroudsburg, Pa., has moved from Stroudsburg to 1896 Jefferson Avenue, Bethlehem, Pa.

Class of 1917

Frank L. Benscoter, formerly with the Regina Co., New York City, is now Training Officer, U. S. Veterans' Bureau, D. & H. Station, Scranton, Pa., and is living at 1656 Monroe Avenue.

Lt. Walter W. Gilmore, U. S. N., is back from France and is now Supply and Disbursing Officer, Submarine Div. 5, and is living at Pine Beach Hotel, Naval Operating Base, Hampton Roads, Va.

"Bob" Good, originally '17, our noted wrestler and football star, is now in charge of athletics at the Towanda High School, Towanda, Pa.

S. King Hoagland, formerly an Accountant at 30 Church Street, New York City, is now Senior Accountant, U. S. Shipping Board, Office of Chief Central Accountant, 19th and B Streets, Washington, D. C.

Tadao Igarashi is Vice-President of Ohta & Co., 41, Temma-cho, Saseho City, Japan.

Philip S. Justice is Petroleum Geologist, Sun Co., Beaumont, Texas, and lives at 726 South Park Street, that city.

Harold D. Lehr, formerly with the Bethlehem Steel Co., at Bethlehem, is now with the Combustion Eng. Corp., in New York and is living at the Brooklyn Central Y. M. C. A., 55 Hansen Place, Brooklyn, N. Y.

Frederick M. Porter has left York, Pa., and is Electrician for the Penna. Light & Power Co., and is living at 451 Montclair Avenue, Bethlehem, Pa.

Earl S. Rau writes that he is living at 2300 Montans Street, El Paso, Tex., but does not give his occupation.

Class of 1918

D. Hallock Ketcham has charge of Installation and Repair, Standard Oil Pumps, on Long Island, and lives at Huntington, L. I.

Theodore B. Lashells, formerly with the Youngstown Sheet & Tube Co., Youngstown, O., is now with the Amer. T. & T. Co., 817 14th Street, N. W., Washington, D. C., and is living at 1437 Rhode Island Avenue, N. W.

A. H. Randall is a coal broker in Newark, N. J., and represents the Gilbert Coal Mines, No. 63 Park Row, N. Y. His address is Y. M. C. A., Newark, N. J.

Henry W. Shockley has left Norristown, Pa., and is now Plant Engineer, Virginia Alberene

Corp., Schuyler, Va., and is living at Hotel Schuyler.

Class of 1919

David Dorkin is Superintendent, Crescent Candy Co., 96 Island Brook Avenue, Bridgeport, Conn., and is living at 110 Rocton Avenue.

John C. Knickerbocker, Jr., is in the Traffic Dept., Michigan State Telephone Co., Cass Avenue, Detroit, Mich.

Clyde Nutter, for whom we have had no address, is living at Miller, W. Va.

J. M. Skillman, originally '19, is taking the Test Course with the G. E. Co. at Schenectady, N. Y., and living at 417 Union Street.

Clarence W. Warner is in the Chemical Research Dept., Western Electric Co., New York City, and is living at 80 Prospect Street, East Orange, N. J.

Class of 1920

John Dobbie, Jr., is Assistant Engineer, Dobbie Fdy. & Mach Co., Niagara Falls, N. Y., and is living at 700 Buffalo Avenue.

Zau-Ding Lau has changed his student name to the business name of Ginarm Lao and is with the Bank of Canton, Ltd., 291 Broadway, New York City.

A. J. Sugar is Assistant Manager, Virginia Products Co., 501 Flatiron Bldg., Norfolk, Va., and is living at 1308 Liberty Street.

Wm. K. Wiegner is Draftsman with the Philadelphia Electric Co., 23rd and Market Streets, Philadelphia, Pa., and is living at 5146 Chancellor Street.

Albert J. Wick sends us a copy of the "Circuit Breaker News," a most interesting mimeographic letter which is sent out every two months to the "Circuit Breakers," a bunch of 1920 Electricians. It gives a lot of live wire news and I wish we had room to reproduce the whole issue, as it is a peach. Two items, which give us new addresses, we give herewith:

"Sam Ostrolenk is now at 112 Varnum Street, N. W., Washington, D. C., and is one of Uncle Sam's guardians in the U. S. Patent Office."

"E. L. Tinker, 480 Washington Avenue, West Haven, Conn., is living 'the life of Riley.' He expects to go with the G. E. Co. in November."

Class of 1921

William Arner has left for the Belgian Congo, where he will work for the Union Miniere du Haut-Catanga.

Henry G. Boynton is with Goulds Mfg. Co., Seneca Falls, N. Y.

B. Ettelman is working for the O. B. S. Co., Contracting Engineers, of Philadelphia, Pa., and is located at 1051 Logan Avenue, Tyrone, Pa.

Tomas R. Loughton is working as a Civil Engineer at 156 Locust Avenue, Fairmont, W. Va.

E. M. Looser is Chemist, Morann, Inc., 417 Rosehill Place, Elizabeth, N. J., and is living at 401 Westfield Ave.

Frank W. Miller's engagement to Miss Elizabeth Mac Hunt, of Enston, has been announced. Miller is working for the Lehigh Structural Steel Co., Allentown, Pa., and living at 40 South 10th Street.

Norman S. Merkel is a student, Wharton School, University of Pennsylvania, and is living at 1321 South Hubey Street, Philadelphia, Pa.

W. W. Gilmore, '17, sends a clipping from the Norfolk, Va., "Ledger" of October 7, 1921, showing a picture of Gus Savaria and the other members of the University of Virginia coaching staff and giving Gus quite a send-off.

R. R. Wentz is Lieutenant, U. S. A. Ordnance Dept., Quarters S1-3, Fort Monroe, Va.

SPECIAL NOTES.

"Abe" Fleischer is employed as an Inspector for the Maryland State Roads Commission on concrete

COLGATE'S "HANDY GRIP" The Refill Shaving Stick



*There's no comparison—
In hot water or cold;
In hard water or soft.*

FOR that luxurious moist lather that means an easy shave—there's nothing like Colgate's Shaving Stick, and in the "Handy Grip" there's nothing like it for Convenience and Economy.

Putting a Colgate "Refill" into the "Handy Grip" is easy and simple—just a couple of turns, and it is screwed in firmly. The soap itself is threaded. There is no waste.

Colgate's Shaving Stick not only produces the most soothing lather for the average man but it is a little more economical than cream. As we make all three, we can give you this impartial advice.

COLGATE & CO., Dept. 212, 199 Fulton St., N. Y.

The metal "Handy Grip" containing a trial size stick of Colgate's Shaving Soap, sent for 10c. When the trial stick is used up you can buy the Colgate "Refills," threaded to fit this Grip. There are 350 shaves in a Colgate Shaving Stick—double the number you can get from a tube of cream at the same price.



highways. His address is 601 Garrett Building, Baltimore, Md.

"Sackie" Sakievich passed the Civil Service Examinations and is now paving inspector for Baltimore City.

"Gus" Savaria has been appointed Assistant Football Coach at the University of Virginia, where he is at present busy with the squad.

"Al" Maginnes and "Mike" Schrader are studying law at Harvard. "Mack" is knocking them cold and continues to praise "Baldy."

"Biff" Bailey is making bath tubs with the Bailey Farrel Manufacturing Company, Pittsburgh, Pa.

L. F. Christman is working for Hazin, Whipple and Fuller, Consulting Engineers, in New York

City. His address is 2 Edmarth Place, Hastings-on-the-Hudson, N. Y.

C. H. Wright is with the U. S. Coast and Geodetic Survey on board the U. S. S. Bache which at present is just completing its season's work off the Virginia Coast in the approaches to Chesapeake Bay. His address is U. S. S. Bache, P. O. Box 1112, Norfolk, Va.

From the above it looks as if all the members of the class of 1921 were C.E.'s! Come on, some of you others, and tell us what you are doing! Send all personal items concerning yourself or others to H. C. Bailey, 211 Noble Avenue, Crafton, Pa. Help keep '21 on the map.

H. C. BAILEY.

W. M. LALOR COMPANY

MANHATTAN BUILDING
CHICAGO, ILL.

Apparatus for the Distillation of Water

RAILWAY SALES DEPARTMENT
ZAPON LEATHER CLOTH COMPANY, NEW YORK
"Leather Cloth of Quality"

W. M. LALOR, '04, President

NICETOWN PLATE WASHER CO.

REFINED BAR IRON, FIRE ESCAPE IRON, STEP IRON, PUNCHED BARS AND PLATES,
CAST IRON WASHERS, GALVANIZED WASHERS, WROUGHT WASHERS, STANDARD OR
SPECIAL, MEDIUM STEEL BARS, GALVANIZED BAR IRON

WHEELER LORD, '96

WORKS: JUNIATA AND CLARISSA STS.
NICETOWN, PHILA., PA.

THE LEHIGH COAL AND NAVIGATION COMPANY

437 CHESTNUT STREET
PHILADELPHIA, PA.

Miners of Old Company's Lehigh Coal
Since 1820

SAMUEL D. WARRINER, '90, President

DAYLIGHT ILLUMINATION

The angle of refraction being equal to the angle of incident, it is a simple matter to determine the correct angles to use in manufacturing glass which will give good illumination. But for proper industrial plant illumination, there is more to be considered than mere deflection of light. The direct beam of light must be eliminated in order to prevent sun glare, which is objectionable on account of its causing heavy shadows and strong contrasts which decrease the efficiency of employees and necessitate the use of shades which in turn reduce the light to such an extent that daylight illumination any distance from the light source is not sufficient. Therefore, in order to produce a glass which when used in the windows of industrial plants will produce as near to ideal illumination as possible, we must first eliminate the direct rays of the sun by deflecting the light to the ceiling and side walls which re-deflect it back to a distance 25 to 50 feet from the window throughout the entire working area. To accomplish this we have scientifically designed a type of glass which is named "Factrolite."

Factrolite consists of 30 ribs to the inch, running at right angles, forming 900 pyramidal prisms or 3,600 light deflecting surfaces which completely disintegrate the direct beam of light from the sun. Furthermore, the depressions in the surface of Factrolite are so slight that the accumulation of dirt and dust is minimized and can be perfectly cleaned with an ordinary dry scrubbing brush. Incidentally, the cleaning of windows is most important for keeping up production and increasing the efficiency of any industrial plant and should be given more consideration in plant management.

If you are interested in the distribution of light through Factrolite, we will send you a copy of Laboratory Report—"Factrolited."

MISSISSIPPI WIRE GLASS CO.,

220 Fifth Avenue,

St. Louis.

New York.

Chicago.

USE
"LIMOID" for ECONOMY

In Laying Brick with cement-mortar an addition of "Limoid" (pure "Cedar Hollow" hydrated lime) to the mortar mixture will enable bricklayers to lay more bricks per hour and will give a better bonding mortar.

In placing Concrete an addition of "Limoid" will give a faster flowing mass which will be freer from "honey-comb" and weak sections.

Charles Warner Company

FRED. A. DABOLL, '96, General Sales Manager

Wilmington, Del. Philadelphia, Pa. New York City

WESTERN STRUCTURAL STEEL & TANK CO.

INCORPORATED 1914

ENGINEERS AND MANUFACTURERS
STRUCTURAL STEEL, BOILERS, TANKS, ETC.

CHARLES MCGONIGLE, '01, PRES. OTHO POOLE, SECT.
PORTLAND, OREGON.

POOLE-DEAN COMPANY

INCORPORATED 1911

STEEL CONTRACTORS
ERECTORS OF BRIDGES AND BUILDINGS

PORTLAND, OREGON
OTHO POOLE, PRES. CHARLES MCGONIGLE, '01, SECT.

LEVERING & GARRIGUES CO.

552 W. 23d STREET

BOSTON, MASS.

NEW YORK

HARTFORD, CONN.

STEEL CONSTRUCTION

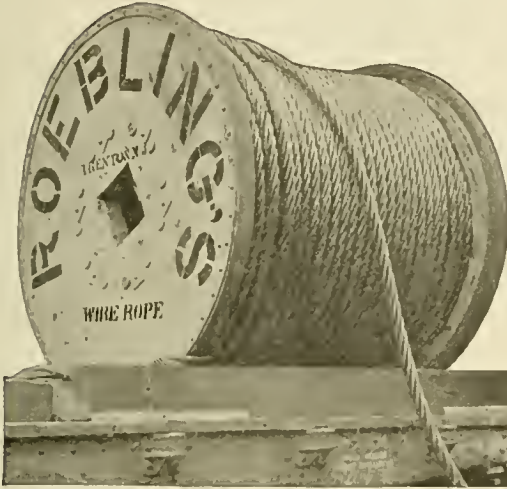
DESIGNERS, MANUFACTURERS
ERECTORS OF STEEL STRUCTURES

ENGINEERS AND GENERAL CONTRACTORS
FOR INDUSTRIAL BUILDINGS

L. L. GADD, '94, Vice-President.

R. F. GADD, '93, New Eng. Mgr.

ROEBLING

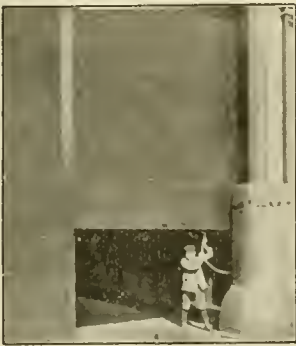


WIRE ROPE

WIRE ROPE FITTINGS
WIRE ROPE SLINGS
WELDING WIRE

JOHN A. ROEBLING'S
SONS COMPANY,
Trenton, New Jersey

THE WILSON ROLLING STEEL DOOR



Hand and Motor operated

Passed by the Board of Fire
Underwriters

Made for any size opening

THE J. G. WILSON CORPORATION

NORFOLK, VA.

8 West 40th St., N. Y.

J. F. MIDDLEBITH, '09, Sec'y and Treas.

TAYLOR-WHARTON IRON & STEEL CO.

HIGH BRIDGE, N. J.

SUBSIDIARIES

WM. WHARTON, JR., & CO., INC., EASTON, PA.

TIOGA STEEL AND IRON CO., PHILADELPHIA, PA.

PHILADELPHIA ROLL & MACHINE CO., PHILADELPHIA, PA.

**TISCO MANGANESE STEEL
WHARTON FROGS, SWITCHES AND
SPECIAL TRACK WORK
ROLLS AND ROLLING MILL MACHINERY
CASTINGS, FORGINGS
GAS CYLINDERS**

J. C. CORNELIUS, '89

H. S. SEIPLE, '00

S. B. KOCH, '08

C. N. SHAFFNER, '10

R. D. JORDAN, '14

HENRY DE HUFF, '95
DANIEL W. BLIEM, '96

GEO. A. HOPKINS

DE HUFF & HOPKINS ENGINEERING EQUIPMENT

MORRIS BLDG.,

PHILADELPHIA

DISTRICT REPRESENTATIVES

GEO. D. WHITCOMB CO.

Gasoline and Electric

Storage Battery Locomotives

**EASTON CAR &
CONSTRUCTION CO.**

Industrial Cars, Track

and Railroad Equipment

COFFIN VALVE CO.

Sluice Gates

and Valves

**JOYCE CRIDLAND LIFTING JACKS.
ENGINEERING EQUIPMENT.**

THE R. G. JOHNSON COMPANY

CONTRACTORS AND ENGINEERS

**SHAFTS, SLOPES
MINING CONSTRUCTION**

PITTSBURGH, PA.

R. G. JOHNSON, '04, PRES.

C. H. DORSEY, '08, TREAS.



TRUCKS

CARS

TWIN SINGLE
SIX SIX

For over two decades the name Packard has
stood for all that is best in car or truck.

PACKARD MOTOR CO. OF PITTSBURGH

HARTLEY HOWARD, JR., '92
VICE-PRESIDENT

THE

Bethlehem Preparatory School

A SCHOOL OF HIGH SCHOLASTIC STANDING

Every opportunity given the student to make rapid
progress and save time.

1600 boys prepared for leading universities in 41 years.

All branches of athletics.

Write for catalogue.

JOHN MITCHELL TUGGEY

Head Master

DE KAY & COMPANY

INCORPORATED

51 MAIDEN LANE

NEW YORK

INSURANCE FOR CORPORATIONS

WORKMEN'S COMPENSATION

EMPLOYERS' LIABILITY

PUBLIC LIABILITY

GROUP LIFE

FIRE

AUTOMOBILE

STRIKE INSURANCE

CATASTROPHE COVERAGE

WE SPECIALIZE IN MANAGING SELF INSURANCE PROBLEMS FOR MANUFACTURERS AND CONTRACTORS. SUPERVISE ALL MEDICAL AND HOSPITAL TREATMENT. INVESTIGATE AND SETTLE ALL CLAIMS DIRECT WITH EMPLOYEES OR OTHER CLAIMANTS. REPRESENT OUR CLIENTS BEFORE THE INDUSTRIAL COMMISSIONS AND PROVIDE EXPERT LEGAL SERVICES IN EVENT OF SUITS.

ACCOUNTS PLACED WITH STOCK INSURANCE COMPANIES ON A BROKERAGE BASIS HAVE THE BENEFIT OF OUR EXPERT SUPERVISION OF CLAIMS WHICH PRODUCES RATE REDUCTIONS IN ALL LINES.

ECKFORD C. DEKAY, '95, PRESIDENT

Kew Gardens Inn

KEW GARDENS, LONG ISLAND

18 Minutes from Pennsylvania Station, New York City

New York's newest and most unique Suburban Hotel. Open throughout the year, affording all the benefits and quiet of Country life with city comforts and conveniences at moderate cost.

Charmingly located. Superior service. Excellent cuisine.

AMERICAN PLAN ONLY.

Delightful Automobile Rides. Within short distance of the finest Golf Courses. Tennis Courts on Grounds.

Geo. H. Wartman, '07, Manager

CARBONDALE WELDING CO.

STEEL DRUMS, TANKS,

ARCHED TAR KETTLES, BUCKETS, PANS,

AND SPECIAL SHEET METAL PRODUCTS

CARBONDALE, PA.

O. B. ACKERLY, JR., '13

G. D. BEVAN



Fleck Bros. Co.

Manufacturers and Dealers



PLUMBING AND HEATING SUPPLIES

SANITARY SPECIALTIES, FACTORY EQUIPMENT,
WROUGHT PIPE, VALVES, SCREWED FITTINGS,
WATER SUPPLY SYSTEMS,
BOILER RADIATORS, PIPELESS FURNACES,
SEPTIC SEWAGE TANKS.
ANYTHING IN PLUMBING OR HEATING LINE.

GENERAL OFFICES

44-50 N. FIFTH STREET
506 ARCH STREET
1645 N. AMERICAN STREET
PHILADELPHIA, PA.

JOHN G. FLECK, '90
VIC.-PRES. & GEN. MGR.
G. B. LAPISH, '19
ASST. PUR. AGT

BRANCHES

E. LANDSDOWNE, PA.
CAMDEN, N. J.
BALTIMORE, MD.
NORFOLK, VA.
READING, PA.
ALLENTOWN, PA.
EASTON, PA.
MACUNGIE, PA.

NEWPORT CHEMICAL WORKS INCORPORATED

— SELLING —

DYES

INTERMEDIATES

PHARMACEUTICALS

CHEMICALS

MANUFACTURED BY

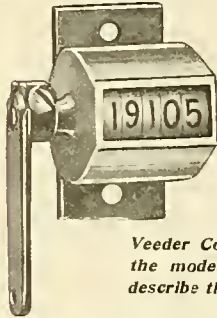
THE NEWPORT COMPANY

CARROLLVILLE, WIS.

JOHN W. SHAEFFER, '01, VICE-PRESIDENT
MAURICE T. COAKLEY, '12
JOHN MCKAY, '18

Veeder

Products: CYCLOMETERS FOR BICYCLES AND MOTORCYCLES, TO RECORD DISTANCE TRAVELED; ODOMETERS FOR MOTOR TRUCKS AND HORSE-DRAWN VEHICLES, TO REGISTER MILEAGE; COUNTERS FOR RECORDING THE PRODUCTION OF MACHINES; SPEED COUNTERS FOR COUNTING REVOLUTIONS (PER MINUTE) OF SHAFTS OR FLYWHEELS; TACHOMETERS FOR INDICATING IN REVOLUTIONS-PER-MINUTE THE SPEED OF MOTORS, PRIME MOTORS, GENERATORS OR ANY REVOLVING PART.



The small Rotary Ratchet Counter shown at left is a most adaptable counter for practical and experimental work. It counts reciprocating movements of the lever, as required in recording the output of stamping-presses. When the lever is moved through an angle of 40 to 60 degrees, the counter registers one. A complete revolution of the lever registers ten. This counter is applicable to no end of small machines, by adjusting the throw of the lever.

Price, \$2.00. (Cut nearly full-size).

Veeder Counters are made for every machine that should have one—all the models are shown in the Veeder counter booklet. Special circulars describe the other Veeder products; write for any or all of them.

The Veeder Mfg. Co., 20 Sargeant Street,
HARTFORD, CONN.

PUMPING MACHINERY

WILSON-SNYDER MANUFACTURING CO.

H. D. Wilson, '01, President

PITTSBURGH, PA.

**NICHOLSON & COMPANY
PITTSBURGH CHAIN WORKS**

TESTED CHAINS AND FORGINGS

RANKIN
Pennsylvania

WORKS, HAWKINS STATION, PA.
Pennsylvania Railroad

T. Nicholson, Jr., M.E. '83

D. K. Nicholson, M.E., '85, M.S. '00

"Who Was John Hancock?"

asked Thomas A. Edison in his Employment Questionnaire. "Where have I seen that name," thought the aspirant, and answered, "President of a Life Insurance Company."

"Who Was John Hancock?"

of whom Senator George F. Hoar of Massachusetts, said: "He wrote his name where all nations should behold it, and all time should not efface it."

We will pay
One Hundred Dollars (\$100) for the
best answer to Mr. Edison's question.

Competition closes November 15, 1921

ADDRESS

DEPARTMENT OF PUBLICITY

John Hancock
MUTUAL
LIFE INSURANCE COMPANY
OF BOSTON, MASSACHUSETTS

THE PHOENIX IRON CO.

Manufacturers of Open Hearth

Structural Steel Shapes

Works:

PHOENIXVILLE, PA.

Main Office:

PHILADELPHIA, PA.

Offices: 22 S. 15th St., Philadelphia. 110 State St., Boston.
132 Nassau St., New York. Chamber of Com. Bldg., Rochester.

THE PHOENIX BRIDGE CO.

Engineers and Builders of

Bridges and Other Structures of Steel

Bridge Works, PHOENIXVILLE, PA.

Established 1790

Capacity 75,000 Tons per Annum.

W. R. HALL, '02, ASST. ENGR.,
W. H. ELLIS, '09, ASST. ENGR.,
W. E. STURGIS, '10, RES. ENGR.,

BRIDGE DEPT.
ERECTION DEPT.
WASHINGTON OFFICE

RICHARDS & GASTON, INC.

ENGINEERS AND CONTRACTORS

RAILROADS, BRIDGES,
STEAM SHOVEL WORK, ETC.

OFFICE SHOPS AND YARD,
110 SOUTH BRIDGE ST., SOMERVILLE, N. J.

LOUIS P. GASTON, '88, PRES.

H. G. VANDERVEER, '03
S. B. RICHARDS, '20

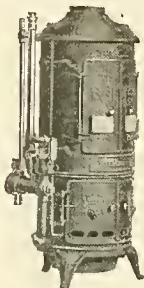
Carrier Engineering Corporation



39 CORTLANDT ST., NEW YORK, N. Y.

E. T. MURPHY, '01, VICE-PRESIDENT
PHILADELPHIA PA.

HUMIDIFYING, DEHUMIDIFYING, COOLING, AIR WASHING, AUTOMATIC TEMPERATURE AND HUMIDITY REGULATION.



Pittsburg

Automatic Gas Water Heaters

SUPPLIES PROMPT SERVICE HOT WATER
FOR THE HOME OR INDUSTRIAL INSTITUTIONS INSTANTLY AT THE TURN
OF THE FAUCET

EASILY INSTALLED. NO CHANGE IN PRESENT PLUMBING NECESSARY.
AMOUNT OF GAS CONSUMED IS MEASURED BY THE HOT WATER USED.
SEND FOR CATALOG. BRANCH OFFICES IN ALL LARGE CITIES.

PITTSBURG WATER HEATER COMPANY
PITTSBURGH, PA.

JOHN JOY EDSON, JR., '93, PRESIDENT

Bethlehem Foundry & Machine Company

GENERAL FOUNDERS
AND MACHINISTS

BETHLEHEM, PENNA.

W. A. WILBUR, President

ROBT. E. WILBUR, '04. Asst. to Gen'l Mgr.

J. GEORGE LEHMAN, '96. 1st Vice Pres & Gen'l Mgr. I. E. KRAUSE, Sec'y and Treas.



Apartment House, 98th and Broadway, New York City

Bethlehem Fabricators

INC.

OFFICE AND WORKS
BETHLEHEM, PENNA.

NEW YORK OFFICE
7 E. 42D STREET

PHILADELPHIA OFFICE
N. E. CORNER BROAD AND PINE
STREETS

Standard Buildings

IN STOCK

STRUCTURAL STEEL
FABRICATORS
AND ERECTORS

LARGE STOCK PLAIN MATERIAL
GENERAL MACHINE WORK

R. P. Hutchinson, '04
J. H. Tracer, '03
Leonard Savastio, '13
G. M. Overfield, '14
F. L. Stephenson, '15
R. W. Wolcott, '18
C. Atkins, '19
B. B. Davidson, '20

Standard Underground Cable Company

Manufacturers of

Copper, Brass, Bronze Wires and Rods
Copper and Brass Tubes
Colonial Copper Clad Steel Wire
Bare and Insulated Wire of all kinds
Lead Covered and Armored Cables
Cable Accessories of all kinds

General Offices
Pittsburgh, Pa.

Branches

Boston
New York
Philadelphia
Washington
Los Angeles

Atlanta
Pittsburgh
Salt Lake City

Chicago
Detroit

St. Louis
Seattle

San Francisco

P. H. W. Smith, '92, Vice President.
G. J. Shurts, '12.
E. T. Carmichael, '17.
F. W. Wilson, '22.

C. L. MCKENZIE, '93, PRES.

C. C. BURGESS, '95, CHIEF ENGR.

PITTSBURGH CONSTRUCTION CO. GENERAL CONTRACTORS

DIAMOND BANK BUILDING

PITTSBURGH, PA.

STEEL BRIDGE ERECTION, CONCRETE MASONRY, Etc.

C. L. MCKENZIE, '93, PRES.

C. C. BURGESS, '95, ASST. ENGR.

CONCRETE PRODUCTS COMPANY OF PITTSBURGH

DIAMOND BANK BUILDING

PITTSBURGH, PA.

REINFORCED, FACTORY-MADE,
CONCRETE CULVERT PIPE,
EMBANKMENT CRIBBING, ETC.

Worthington satisfies every power plant pumping need

IMMENSE shop facilities, standardized manufacturing plus over 81 years of designing, improving and manufacturing pumps and pumping machinery have resulted in apparatus of suitable design for every power plant pumping duty.

This broad range and varied choice of apparatus together with over 200,000,000 boiler horse power successfully satisfied since 1840 justifies specifying Worthington for power plant apparatus. The Worthington engineering corps always stand ready to co-operate in order to obtain greatest possible results from apparatus selected.

WORTHINGTON PUMP AND MACHINERY CORPORATION

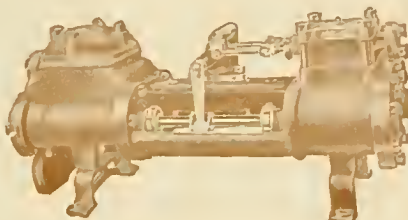
G. P. Coleman, '88, President

Executive Offices: 115 Broadway, New York City

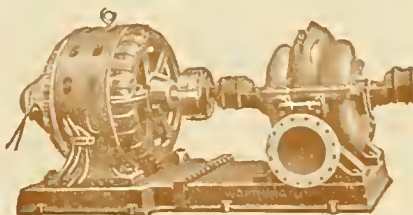
Branch Offices in 24 Large Cities



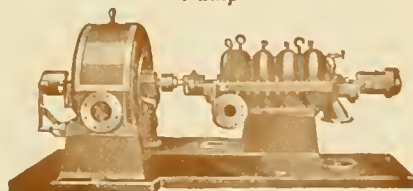
Pot Valve Boiler Feed Pump



Duplex Packed Piston Pump



Split Casing Double Suction Volute Pump



Worthington Double Suction Centrifugal Boiler Feed Pump

Centrifugal pumps often become steam bound while handling hot water. Under such conditions, the rotating element of the average pump may seize at close clearance points. Worthington double suction centrifugal boiler feeder is equipped with a special floating sealing ring device which prevents this binding.

38



PUMPS—COMPRESSORS—CONDENSERS—OIL & GAS ENGINES—METERS—MINING—ROCK CRUSHING & CRMENT MACHINERY

WORTHINGTON

Deane Works, Holyoke, Mass.
Blake & Knowles Works
East Cambridge, Mass.
Worthington Works
Harrison, N. J.
Laidlaw Works, Cincinnati, Ohio.

Hazleton Works,

Hazleton, Pa.

Gas Engine Works, Cudahy, Wisc.
Power & Mining Works
Cudahy, Wisc.
Snow-Holly Works
Buffalo, N. Y.
Lippincott-Carpenter, Pittsburgh, Pa.



WHITE & BRO.

INCORPORATED

SMELTERS AND REFINERS

412 NORTH AMERICAN BUILDING

PHILADELPHIA

HARRY A. WHITE, '95

C. B. WHITE, '05

FRANKLIN BAKER COMPANY

PHILADELPHIA

COCONUT PRODUCTS

CANNED COCONUT

COCONUT OIL

COCONUT FIBRE

President, Franklin Baker, Jr., '95



ESTABLISHED 1857

INCORPORATED 1906

T. B. WOOD'S SONS COMPANY

CHAMBERSBURG, PA.

**MODERN AND APPROVED APPLI-
ANCES FOR THE TRANSMISSION
OF POWER**

CHAS. O. WOOD, '92

T. B. WOOD, '98

G. H. WOOD, '99

Alan C. Dodson, '00
T. M. Dodson, '00
G. R. Radford, '84
C. S. Kenney, '10
H. B. Tinges, '12
C. L. Packard, '14
E. M. Robinson, '17
F. P. Diener, '20



ANTHRACITE and BITUMINOUS COAL

GENERAL OFFICES, BETHLEHEM, PA.

THE ROWAN CONTROLLER COMPANY MANUFACTURERS OF AUTOMATIC MOTOR CONTROL

PRESIDENT, J. S. ROWAN, '10
SALES MANAGER, W. C. JACKSON, '10

BALTIMORE

PROFESSIONAL CARDS

NEW YORK CITY

TEL. "BARCLAY 7670"

JOSEPH TREANOR McNAIER, '02 LAWYER

GENERAL PRACTICE
ENGINEERING PRACTICE

SUITE 830-838
WOOLWORTH BUILDING

Methuen, Mass., Phone 31 Lawrence
WILLIAM D. HARTSHORNE, '74
Consulting Engineer
Textile Mill Conditions a Specialty
Cable Address
"Hartshorne, Lawrence" Mass.

Coal Exchange Bldg. Scranton, Pa.
WILLIAM GRIFFITH, '76
Consulting Geologist and Engineer

COAL PROBLEMS - Examinations, Reports, etc.
anywhere at any time.
Interviews by appointment in larger cities

New York City 15 Park Row
FORSTALL AND ROBSON
Consulting Engineers
For Public Utilities

Alfred E. Forstall, '83

Washington, D.C. 916 G. St., N.W.

JAMES A. WATSON, '84

Patent Lawyer

St. Louis, Mo. 711 Clark Ave.
ROBERT W. BARRELL, '87
President

St. Louis Sampling & Testing Works, Inc.
Chemists, Metallurgists and Mining Engineers
All kinds of analyses, investigations, examinations
and reports in these lines made promptly
and carefully

Washington, D.C. Colorado Bldg.
14th and G Sts., N.W.

RALPH W. LEE, '87

Fire and Liability Insurance

Correspondence solicited

Alumni Bulletin of Lehigh University

PROFESSIONAL CARDS—Continued

Philadelphia 112 N. Broad Street

J. W. LEDOUX, '87
CONSULTING ENGINEER

Water Works, Water Power, Reports, Designs,
Construction, Supervision, Valuation,
Arbitration, Rate Schedules.

Philadelphia 1318 Land Title Bldg.

CHARLES N. BUTLER, '88
Patent Attorney

New York City 31 Union Square, West

PERRY & WEBSTER, INC.
Chemical and Industrial Engineers
Investigation, Design and Supervision of
Chemical and Metallurgical Investment and
Plant. Confidential Reports for Financial
Interests.
Robert S. Perry, '88, President

New York City 15 Park Row

CLARENCE W. HUDSON, '89
Consulting Engineer
Designs, Estimates, Reports on
All Classes of Structures

New York City 50 Church St.

ALEXANDER POTTER, '90
Consulting Engineer
Hydraulics, Sanitation, Concrete
Structures
Tel.: 5501 Cortland

Philadelphia 6th and Walnut Sts.

PERCIVAL DRAYTON, '92
Penn Mutual Life Insurance Co.
Protect your Earning Capacity and Dependents
from Loss by OLD AGE, DISABILITY, DEATH
Bell Tel.: Lombard 3780

Washington, D.C. McGill Bldg.

CHARLES J. O'NEILL, '93
Patent Lawyer

Pittsburgh 1st National Bank Bldg.

BATON & ELLIOTT
Consulting Engineers

Reports on Western Mining Property
G. S. Baton, '94 J. R. Elliott

New York City 363 Lexington Ave.

VISSCHER & BURLEY
Architects
T. C. Visscher, '99 J. L. Burley, '94

New York City 39 E. 28th St.

GEORGE L. ROBINSON
Consulting Engineer
Sewers, Sewage Disposal, Water
Supply

New Haven Conn. 839 Chapel St.

NORTON & TOWNSEND
Architects
C. F. Townsend, '95, Architect for
Phi Delta Theta Fraternity House
General architectural practice with
bank designing a specialty

CADWALLADER EVANS, JR., 1901

Consulting Engineer
COAL
717 Connell Bldg. Scranton, Pa.

New York City Woolworth Bldg.
233 Broadway

WARD, CROSBY & SMITH
Patent Lawyers
Dyer Smith, '03

WASHINGTON, D.C. NEW YORK CITY
514 Union Trust Bldg 9099-9110 Metropolitan Bldg.

H. J. JACKSON, '08
Agent
THE NORTHWESTERN MUTUAL
Life Insurance Company
of Milwaukee, Wis.

THE
AMERICAN CAR AND FOUNDRY COMPANY
BUILDERS
OF
RAILROAD EQUIPMENT

WILLIAM CARTER DICKERMAN, '96
VICE-PRESIDENT IN CHARGE OF OPERATION

FRANK FAUST, '94
DIST. MGR. MILTON, PA., DISTRICT

HASELL WILSON BALDWIN, '96
ASST. DIST. MGR. BUFFALO DISTRICT

CHARLES LOOMIS ROGERS, '83
PRESIDENT

THE SLIGO FURNACE CO.

NEW YORK

CHICAGO

ST. LOUIS

BETHLEHEM STEEL COMPANY

*Works at
Bethlehem, Lebanon, Reading, Steelton, Pa.;
Baltimore, Sparrows Point, Md.*

General Offices: Bethlehem, Pa.

SALES OFFICES:

*Atlanta, Baltimore, Boston, Chicago, Cleveland, Detroit,
New York, Philadelphia, Pittsburgh, St. Louis,
San Francisco, Washington*

E. G. Grace, '99	President
Archibald Johnston, '89	Vice-President
H. S. Snyder	Vice-President
C. A. Buck, '87	Vice-President
H. E. Lewis	Vice-President
Quincy Bent	Vice-President
R. E. McMath	Secretary
W. F. Hartmann	Treasurer
F. A. Schick	Comptroller